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ABSTRACT

This document, which is designed for educators throughout Ohio who are involved in planning and/or delivering tech prep programs within the business/computer technologies cluster, discusses and presents tech prep competency profiles (TCPs) for 12 business/computer technology occupations. The first part of the document contains the following: discussion of Ohio's vision of tech prep, the Ohio Tech Prep Path, and six critical components guiding Ohio's tech prep consortia; explanation of the philosophy underlying the development of TCPs and the TCP development process; listings of the business, industry, labor representatives, and secondary and postsecondary educators involved in developing the business/computer technologies TCPs; sample business/computer TCP from one Ohio tech prep consortium; TCP matrix defining each of the 12 technical occupations and a matrix for use in compiling draft TCPs to fit local labor market needs; and outline of the units appearing in each of the individual occupations and in various cluster combinations. The remainder of the document presents both core and specialized units for the following specific occupations: accounting specialist, financial management assistant, office management specialist, paralegal, management information specialist, computer programmer/analyst, information support specialist, microcomputer applications specialist, computer programmer/analyst, computer (personal computer/network) technician, network systems technician, and telecommunications specialist. (MN)

ED 387 630

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TECH PREP

"GET SERIOUS . . . ABOUT SUCCESS"

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The State of Ohio presents . . .

Tech-Prep Competency Profiles

within the

Business/ Computer Technologies

Accounting Specialist
Financial Management Assistant
Office Management Specialist
Paralegal
Management Information Specialist
Computer Programmer/Analyst
Information Support Specialist
Microcomputer Applications Specialist
Computer Support Technician
Computer (PC/Network) Coordinator
Network Systems Technician
Telecommunications Specialist

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How to Use the TCP Binder

This binder is divided into the following sections:

Systemic Curriculum Reform Philosophy shares Ohio's vision of Tech Prep, the Ohio Tech Prep Path, and six critical components which guide Ohio's Tech Prep consortia.

The TCP Process explains the philosophy behind the development of Tech-Prep Competency Profiles (TCPs) and details the process that yielded this composite binder on Business/Computer Technologies.

TCP Partners from Industry is a listing of the business, industry, and labor representatives who participated in the development of TCPs within the Business/Computer Technologies.

TCP Partners from Education is a listing of the secondary and postsecondary educators who participated in the development of TCPs within Business/Computer Technologies.

A Sample TCP—This section contains an actual Business/Computer TCP from one of Ohio's Tech Prep consortia.

TCP Matrix—This section provides definitions for each of the twelve technical occupations within this Business/Computer Technologies Cluster and an actual matrix for your use in compiling draft competency lists to develop a Tech-Prep Competency Profile that fits the labor market needs of your consortium.

Essential Competencies outlines the units that appear in each of the individual occupations as well as in various cluster combinations. These competencies may vary slightly due to program emphasis, yet they should be viewed as essential to success within the Business/Computer Technologies.

—continued on the reverse—

Each of the following sections of the binder contain both core and specialized units for a specific occupation within Business/Computer Technologies.

Accounting Specialist
Financial Management Assistant
Office Management Specialist
Paralegal
Management Information Specialist
Computer Programmer/Analyst
Information Support Specialist
Microcomputer Applications Specialist
Computer Programmer/Analyst
Computer (PC/Network) Technician
Network Systems Technician
Telecommunications Specialist

As you use these twelve sections and the TCP Matrix, please note the following :

All the units listed in these sections will not necessarily apply to your situation, nor will all the competencies within each unit be appropriate. For example, some units will not appear in a final TCP, others will, and still others will only appear in partial form. Likewise, some competencies and/or competency builders will either be (1) added, (2) deleted, or (3) altered in wording in a final TCP. In some cases the number of units listed far exceeds the amount of content that can be covered.

Also, note that several units appear within each specific occupation and should only be listed once if you are compiling a cluster of occupations (e.g., Accounting Specialist, Telecommunications Specialist, and Computer Programmer/Analyst as a Business/Computer Technologies Cluster). Always review each list of units against the TCP Matrix and your labor market demands before attempting verification (TCP Part I), leveling (TCP Part II), and teambuilding (TCP Part III).

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OHIO'S VISION

Tech Prep in Ohio *is defined as a competency-based program of combined secondary and postsecondary education and occupational experience that includes a common core of required proficiency in mathematics, science, communication, and technologies designed to lead to an associate degree or two-year postsecondary certificate in specific career fields.* Our goal is to produce a highly educated and qualified workforce that is reponsive to the needs of business, industry, and labor.

Through Ohio's statewide network of consortia, Tech Prep promotes effective linkages among secondary and postsecondary schools and colleges. Each consortium is comprised of (a) at least one public community college, public technical college or branch campus offering technical education associate degree programs, (b) one or more vocational education planning districts (VEPDs), and (c) business, industry, and labor partners. Associate schools within each VEPD, co-located regional campuses, four-year universities, Job Training Partnership Act (JTPA) Service Delivery Areas (SDAs), and Ohio's Thomas Edison programs are encouraged to be active members of the consortium.

Starting with the student's Individual Career Plan (ICP) in grade 9, Tech Prep programs arrange the study of mathematics, science, communications, technology, and specific technical skills in a **step-by-step progression of coordinated curricula**. The goal of Ohio's Tech Prep program is to produce students who possess the advanced skills necessary to enter technical occupations by the end of a two-year postsecondary degree, school-to-work, or an apprenticeship program. This is to be achieved through an unduplicated program of study that is responsive to the changing technical needs of business, industry, and labor.

Tech Prep programs do not focus on linking what Ohio is currently doing at the secondary level with what is currently being offered at the postsecondary level, but rather **focus on achieving systemic change at both levels**. In order to achieve this ambitious outcome, Ohio's Tech Prep programs require academic, occupational, and employability competency attainment at both the secondary and postsecondary levels.

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OHIO'S VISION

AT THE SECONDARY LEVEL:

- **Academic competency** requirements must be defined at the end of grade 12 and obtained through college-prep courses or applied academic courses.
- **Occupational competency** requirements and employment options must be defined at the end of the 12th grade. Occupational competencies at the secondary level may be obtained through vocational education, technical education (using postsecondary options), school-to-work, or an apprenticeship program.
- **Employability competency** requirements must be defined at the end of grade 12.

AT THE POSTSECONDARY LEVEL:

- **Academic competency** requirements must be defined at the end of the postsecondary degree, school-to-work, or apprenticeship program.
- **Occupational competency** requirements must be defined by the end of the postsecondary degree, school-to-work, or an apprenticeship program. Occupational competencies at the postsecondary level may be obtained through technical education (using postsecondary options), school-to-work, or an apprenticeship program.
- **Employability competency** requirements must be defined at the end of the postsecondary degree, school-to-work program, or apprenticeship program.

"GET SERIOUS ABOUT SUCCESS"

Tech Prep in Ohio is an educational path that prepares students for employment in a technical occupation. Tech Prep prepares students for careers requiring specific occupational course work in high school and a two-year college technical degree or two-year postsecondary certificate program. In addition, Tech Prep students have the option to go directly to work after high school or to a four-year college or university.

Ohio's Tech-Prep Path

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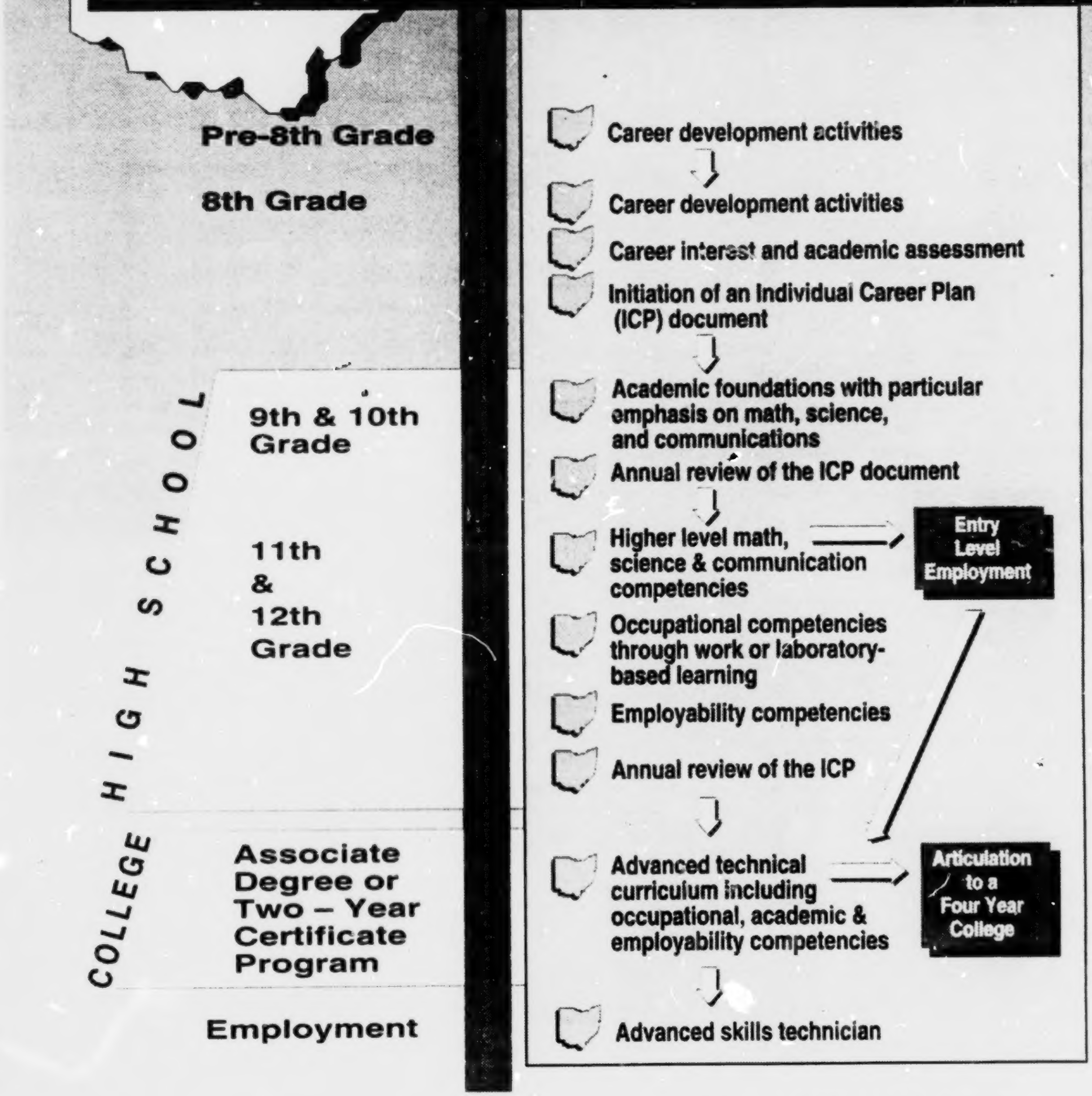
Tech-Prep in Ohio is an educational path that prepares you for employment in a high-skill technical occupation. Careers in Tech-Prep usally require specific vocational-technical course work in high school and two years of education beyond high school. However, if you enroll in a Tech-Prep program you might also be prepared to go directly to work after high school or to a four-year college or university.



Pre-8th Grade

- Career development activities

8th Grade

- Career development activities
- Career interest and academic assessment
- Initiation of an Individual Career Plan (ICP) document

HIGH SCHOOL

9th & 10th Grade

- Academic foundations with particular emphasis on math, science, and communications
- Annual review of the ICP document

11th & 12th Grade

- Higher level math, science & communication competencies → Entry Level Employment
- Occupational competencies through work or laboratory-based learning
- Employability competencies
- Annual review of the ICP

COLLEGE

Associate Degree or Two – Year Certificate Program

- Advanced technical curriculum including occupational, academic & employability competencies → Articulation to a Four Year College

Employment

- Advanced skills technician

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OHIO'S CRITICAL COMPONENTS

I. SYSTEMIC CHANGE

Tech Prep programs will demonstrate systemic change. New, creative, and innovative options will be provided to students. These options will not focus on linking what Ohio is currently doing at the secondary level with what is currently being offered at the postsecondary level, but rather focus on achieving systemic change at both levels.

II. EXPANDED STUDENT OPPORTUNITY

Tech Prep programs will provide expanded opportunities for all students.

III. PARTNERSHIPS

Tech Prep programs are a partnership between secondary education, postsecondary education, and business, industry, and labor.

IV. EARLY INDIVIDUAL CAREER EDUCATION

Early career education and career exploration are essential to Tech Prep programs. Starting with the student's Individual Career Plan (ICP) in grade 9, Tech Prep programs arrange the study of mathematics, science, communication, technology, and specific technical skills in a step-by-step progression of coordinated curricula.

V. COMPETENCIES

Academic, occupational, and employability competencies are required at both the secondary and postsecondary levels, enabling a student to enter employment at both the completion of the 12th grade and the end of the postsecondary program.

VI. ADVANCED SKILLS

Tech Prep curriculum must prepare students with the advanced skills necessary for technical occupations by the end of a two-year postsecondary degree, school-to-work, or an apprenticeship program through an unduplicated program of study that is responsive to the changing technical needs of business, industry, and labor.

Tech-Prep Competency Profiles (TCPs)

Federal Guidelines

As the 21st century approaches our need to achieve systemic educational change is paramount. In direct response to Goal 5 of the National Education Goals, Section 347 of PL. 101-392 states: the term "tech-prep education program" means a combined secondary and postsecondary program which (1) leads to an associate degree or 2-year certificate; (2) provides technical preparation in at least one field of engineering technology, applied science, mechanical, industrial, or practical art or trade, or agriculture, health, or business; (3) builds student competence in mathematics, science, and communications (including through applied academics) through a sequential course of study; and (4) leads to placement in employment. Tech Prep is an effective way for educators to join forces with business, industry, and labor to offer expanded opportunities to the future work force.

Systemic Curriculum Reform

In Ohio, Tech Prep is a reconceptualization of curriculum designed to train a more flexible, knowledgeable, and technically adept workforce. We are (1) setting standards that will equip students with the knowledge and skills needed for employment and the lifelong learning skills needed to retrain as job market requirements change; (2) improving the match between what work requires and what students are taught; (3) addressing the curricular needs of differences among students; and (4) providing continuity in learning by teaching in context. Yet, the primary obstacle of systemic curriculum reform is individuals who fear change.

The TCP "Process"

Therefore, Ohio is using a **process** which allows individuals from both secondary and postsecondary education and business, industry, and labor to deal with change in a positive manner by being active decision makers in the development of Tech Prep curriculum. The Tech-Prep Competency Profile (TCP) Process produces a list of occupational, academic, and employability competencies that need to be obtained during grades 9-12 and the first two years of postsecondary training—leading to an associate degree or two-year postsecondary certificate—in preparation for technician level positions in business, industry, and labor. Each step of the process is described on the following pages.

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Prior to Part I of the TCP Process...

—Labor market survey data is collected and analyzed to determine the need for "technicians" within the consortium.

—Once that individual occupation or cluster of occupations has been identified, definitions are prepared and approved by the governing body of the consortium. A sample definition follows:

Computer Support Technician—An individual who supports users of hardware and software, including maintenance, special training needs, system upgrades, troubleshooting, and problem solving. Technical skills should include, but not be limited to:

- problem analysis
- project management
- documentation skills
- fundamental programming skills
- hardware and software applications
- hardware design and maintenance
- troubleshooting LANs and PCs

—The definitions are then used to identify the units needed to compile a draft list of competencies for use in Part I of the TCP Process. Note: The original draft TCPs for each occupational cluster were derived from an international literature review of items that were (1) not listed in the bibliographies of Ohio's 1990-1992 Competency Analysis Profiles (national literature review used); (2) postsecondary academic and technical course outlines and DACUM charts; and (3) curriculum items entered into ERIC between 1990-95. Then, as TCPs were conducted across Ohio during 1993-95, each consortium's specific labor market needs broadened the databank of possible competencies. As each TCP was completed, the final competency list was entered into a composite file, creating a set of core units (with a high rate of appearance on TCPs) and a set of specialty units (appearing only on certain TCPs due to specific labor market demands). This compiling mechanism resulted in a composite TCP Binder for each technology cluster.

—Partial Business Technologies Bibliography—

Every item used to develop specific TCPs (e.g., individual college course outlines) is not included.

Business education curriculum standards K-12. (October 1990). Dover: Delaware Department of Public Instruction, Vocational Education Division.

Business PC specialist and computer programming training. (1991). Los Angeles, California: Evaluation and Training Institute.

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—Partial Business Technologies Bibliography (cont.)—

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Computer technologies cluster tech-prep competency profile. (1995). Piqua, Ohio: Upper Miami Valley Tech Prep Consortium.

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Curriculum outcomes for high school tech-prep graduates. (April 18, 1992). Columbus: Central Ohio Tech-Prep Consortium.

DACUM profile for computer technology (April 1993). Warren, Ohio: Kent Trumbull Tech-Prep Consortium.

DACUM profile for electronic publishing technician. (February 1990). Baltimore, Maryland: State Department of Education, Division of Vocational-Technical Education.

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—Partial Business Technologies Bibliography (cont.)—

Every item used to develop specific TCPs (e.g., individual college course outlines) is not included.

Elliott, R. T., & Benson, R. T. (1988). *V-TECS guide for information processing specialist*. Columbia: South Carolina Department of Education, Office of Vocational Education, Division of Instruction.

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Model competency-based language arts program. (1992). Columbus: Ohio Department of Education, Division of Curriculum, Instruction, and Professional Development.

Model competency-based mathematics program. (1991). Columbus: Ohio Department of Education, Division of Elementary and Secondary Education.

Model competency-based science program. (1994). Columbus: Ohio Department of Education, Division of Professional Development.

National minimum standards for associate degree technical education programs. (1991). Wahpeton, North Dakota: American Technical Education Association.

Network communications cluster tech-prep competency profile. (1994). Elyria, Ohio: Lorain County Tech Prep Consortium.

Office systems. Competency based program content standards for office occupations. (1990). Salem: Oregon Department of Education, Division of Vocational Technical Education.

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Ohio competency analysis profile. Administrative/secretarial services. (April 1992). Columbus: Ohio Department of Education, Division of Vocational and Career Education, and The Ohio State University, Center on Education and Training for Employment, Vocational Instructional Materials Laboratory.

Ohio competency analysis profile. Business administration and management. (August 1991). Columbus: Ohio Department of Education, Division of Vocational and Career Education, and The Ohio State University, Center on Education and Training for Employment, Vocational Instructional Materials Laboratory.

Ohio competency analysis profile. Business information systems. (August 1991). Columbus: Ohio Department of Education, Division of Vocational and Career Education, and The Ohio State University, Center on Education and Training for Employment, Vocational Instructional Materials Laboratory.

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—Partial Business Technologies Bibliography (cont.)—

Every item used to develop specific TCPs (e.g., individual college course outlines) is not included.

Ohio competency analysis profile. Entrepreneurship. (August 1991). Columbus: Ohio Department of Education, Division of Vocational and Career Education, and The Ohio State University, Center on Education and Training for Employment, Vocational Instructional Materials Laboratory.

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Zilbert, E. E., & Mercer, J. W. (1992). *Technology competence: Learner goals for all Minnesotans.* St. Paul, Minnesota: State Council on Vocational Technical Education.

Part I of the TCP Process...

Business, industry, and labor representatives from a consortium's labor market area are convened (8-14 hours) to identify the occupational, academic, and employability competenices needed by one or more technician-level positions.

—First, a brainstorming session is conducted to identify the critical skills needed by the technician(s) positions being targeted (e.g., Accounting Specialist, or a cluster of occupations within Business/Computer Technologies).

—Second, a draft competency list that has been compiled in accordance with definitions of the individual or group of technician-level position(s) identified as the Tech-Prep consortium's labor market need is offered for consideration. The business, industry, and labor representatives eagerly (1) add to, (2) delete from, and (3) alter the wording of the draft competency list until it reflects the needs in the consortium's labor market area. It is critical that business, industry, and

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Part I of the TCP Process...(continued)

labor representatives alter the draft to fit the needs of their area, because it will be the catalyst for systemic curriculum reform in their schools and colleges—ultimately altering the type of employee pool available.

—Finally, the business, industry, and labor representatives are provided with copies of Ohio's Language Arts (Communications), Mathematics, and Science Curriculum Models. They are asked to circle the code beside each competency they think is appropriate to be taught in the context of the technologies being adddressed by the TCP. This is done by silent, written votes so that the educational levels of committee members will not sway the results. After aggregating their responses, the corresponding competencies are marked with an asterisk (*) and used for discussion during Parts II and III of the TCP Process.

Part II of the TCP Process...

Both the academic and vocational-technical faculty members who will be delivering the competencies in the consortium's participating secondary schools and postsecondary colleges meet (6 hours) to assign grade levels and mastery levels to each competency on the list.

—Codes are used to indicate two-year increments (10, 12, AD) during which the competencies will be introduced (I) and/or reinforced (R); when students will be deemed competent (C), proficient (P), or master (M) the competency; whether the competency will be taught at a worksite (WS); or is a lifelong learning (LL) skill due to technological change. Most competencies carry multiple codes such as I-10, M-12, R-AD, WS, LL or I-12, M-AD, WS.

—Faculty members are also asked to identify obstacles that would inhibit delivering the competencies as stated (e.g., wording, equipment, inservice needs). These issues are recorded and discussed during TCP Part III.

—Faculty members are also given the list of academic competencies that business, industry, and labor representatives identified during Part I as appropriate to be taught in the context of those technologies (indicated by an asterisk*) and asked to verify the validity of those choices. They are also asked to identify (using #) any additional competencies that need to be taught in the context of those technologies Note—this is necessary due to educational terms being uninterperable by industry representatives. In this way faculty will discuss ways to apply academic content to the various technologies and ways to collaborate across disciplines.

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Faculty would examine the following mathematics sample during TCP Part II.

Unit: Mathematics Literacy *** = Industry identified these to be taught using applied methods** **# = Teachers identified these to also be taught using applied methods** **Note: The remaining competencies are to be taught using regular or applied methods.**	**10**	**12**	**AD**	**WS**	**LL**
Subunit: Data Analysis and Probability					
Describe normal curve in general terms and use its properties*					
Create and interpret discrete probability distributions#					
Understand concept of random variable (the list would continue...)					

Part III of the TCP Process...

Both groups, from TCP Parts I and II, meet together (4 hours) to address perceived obstacles to accomplishing the competencies and how they, as a team, can best work together to facilitate delivery of the curriculum by removing or addressing each of the obstacles identified in Parts II and III. This is the "magic" of the TCP Process. With all the individual "players" at the same table, planning for true systemic change can take place—especially if the focus is improving the education and training of students who will be their future employees and community members.

Post TCP Part III

Following Part III of the TCP Process, the Tech Prep consortium develops their systemic reform curriculum pathway(s). An important step in developing those curriculum pathways is the leveling of all the competency builders. When completed the TCP Accountablility Chart might look like the following example:

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Sample Section of a TCP Accountabilty Chart

Unit: Computer Literacy	**10**	**12**	**AD**	**WS**	**LL**
Competency: Explain information processing cycle	**I**	**M**			
Competency Builders: Define operating systems (e.g., DOS, OS/2, UNIX)	M	R			
Differentiate between data files and program files	I	M			
Explain PC network layout		M			
Differentiate hardware from software	M	R			
Competency: Operate computer hardware	**I**	**R**	**M**	√	√
Competency Builders: Practice proper media handling techniques (e.g., magnetic fields, dust, liquids)	I	M	R	√	√
Identify hardware and its use	I	M	R	√	√
Use hardware (e.g., mouse, drives, modems, cables, printers, digitizers, scanners, protection devices)	I	R	M	√	√
Keyboard efficiently		M	R	√	
Demonstrate basic care of hardware	I	M	R	√	
Explain need for an application of security levels		R	M	√	

The TCP Accountability Chart is then used to extrapolate competenices into Competency Documentation Sheets which verify that all the competencies in the TCP are within the set of courses identified on the Curriculum Pathway (See pp 7-8).

Partial Sample of a Competency Documentation Sheet

Flagship Tech Prep Consortium, Futures High School
Business Technologies Program

Integrated Math I covers the following competencies:

Estimate and use measurements
Establish ratios with and without common units
Identify area and volume
Organize data into tables, charts, and graphs
Read, interpret, and use tables, charts, and graphs to identify patterns, note trends, draw conclusions, and make predictions
Identify slope, midpoint, and distance
Set up, solve, and graph linear equations
Simplify algebraic expressions
Represent problem situations with geometric models and apply properties of figures, angles, parallel, and perpindicular lines
(the list would continue...)

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SCHOOL NAME
Futures County High School

SCHOOL YEAR
1995-96

TECH PREP PROGRAM
Business/Computer Technologies

FLAGSHIP TECH-PREP CONSORTIUM

9th Grade	Min	10th Grade	Min	11th Grade	Min	12th Grade	Min
English 9	50	English 10	50	English 11	50	English 12	50
Pre-Alg. or Algebra I	50	Algebra I or Geometry	50	Geometry or Algebra II	50	Integrated Math IV	50
Physical Science	50	Biology	50	Elective	50	Elective	50
Social Studies	50	Social Studies	50	Am. History	50	Government/Civics	50
Physical Ed./Health	50	Computer Technology	50	**Business Technology***	50	**Business Technology***	50
Elective	50	Elective	50	**Business Technology***	50	**BT Internship****	50
Elective	50	Elective	50	**BusinessTechnology***	50	**BT Internship****	50

Criteria for entering Grade 11 of Tech Prep:
Passing the 9th Grade Proficiency Test
Passing Algebra I

Criteria for entering college part of Tech Prep:
Scoring "college-ready" on the mathematics and English placement tests

Suggested Electives:
Sociology;
Psychology;
Foreign Language

***Explanation of Tech Prep Course/Block:**
Students are in a Business Technologies block of core curriculum in 11th grade and a shorter block of in 12th grade with intern hours in specialty areas

SAMPLE SECONDARY PATHWAY
(cluster program)

High School Exit Occupations—
Business Records Clerk; Desktop Publishing Assistant

—College Exit Occupations
Accounting Specialist; Management Information Specialist

COLLEGE NAME
Flagship Community College

SCHOOL YEAR
1996-97
FLAGSHIP TECH-PREP CONSORTIUM

TECH PREP PROGRAM
Accounting Specialist

SAMPLE POSTSECONDARY PATHWAY
(one program area)

1st Semester	Cr.	2nd Semester	Cr.	3rd Semester	Cr.	4th Semester	Cr.
College Algebra*	3	Accounting 112	4	Taxation 162	4	Managerial Acctg. 244	3
Computers102*	2	General Elective	3	Speech 134	3	Auditing 255	4
Bus. Administration 141	4	Quantitative Methods 171	4	Finance 222	4	Cost Accounting 223	4
Technical Writing 121	3	Macroeconomics 235	3	Business Law 192	3	Advanced Acctg. 287	4
Accounting 101*	3	**Spreadsheet An. 139***	4	Intermediate Acctg. 201	3	Technical Elective	3
Bus. Communications 131	3	**Sm. Bus. Mgmt. 258**	**3**	**Resource Mgmt. 224**	**3**	**Microeconomics 271**	**3**
						Supervision 221	**3**

Criteria for college part of Tech Prep:
Scoring "collge-ready" on the mathematics and
English placement tests

Advanced Skills portion of Tech Prep:
Shaded classes would be added as capstones
if students test out of starred (*) courses

Suggested Electives:
Sociology; Psychology;
General Marketing Principles;
Tax for Non-Accountants

Explanation of Tech Prep Course Differences:
Deletion of lower level courses due to high school
portion of Tech Prep could result in 3-12 hrs.
of capstone credits = advanced skills

High School Exit Occupations—
Business Records Clerk; Desktop Publishing Assistant

—College Exit Occupation
Accounting Specialist

Akron Area Tech Prep Consortium
Business Technologies Cluster
Business/Industry/Labor Representatives

Hazeljean C. Adams, Director, Information Resource Management
Loral Defense Systems, Akron

Erik Azar, Information Center Analyst
GOJO Industries, Inc., Akron

Nancy J. Black, Operations Administrative Coordinator
GOJO Industries, Inc., Akron

Bonnie J. Bromley, Administrative Assistant
The University of Akron, Akron

Eric C. Constrascier, Systems Engineer
Hitachi Data Systems, Independence

John Derrer, Programmer/Analyst
Summit Information Systems, Inc., Akron

Lynne Foster, Supervisor, Policy Services
Westfield Companies, Westfield Center

Marsha K. Hoover, Account Representative
Republic Engineered Steels, Massillon

Jack E. Thompson, CPA, Owner
Thompson, Klein and Co., Akron

Debbie Watson, Senior Information Center Analyst
Summit Information Systems, Inc., Akron

Allen R. Wilkie, Director, Information Systems
GenCorp, Fairlawn

Kent Trumbull Tech Prep Consortium
Computer Technologies Cluster
Business/Industry/Labor Representatives

Michael Archon, CAD Supervisor
ADS Machinery Corporation, Warren

Robert Baivs, Programmer/Analyst
Kent State University Geauga Campus, Burton

Salvatore DiLiello, Director, Data Processing
City of Warren, Warren

Irene Edge, Computer Center Manager
Kent State University Ashtabula Campus, Ashtabula

Joseph Facciolo, Jr., Network Administrator
Mahoning County Department of Human Services, Youngstown

Robert Kuzenko, President
Trumbull Business Systems, Inc., Warren

Marlene Nephew, Senior Programmer Analyst
CSC CompuSource, Warren

Larry Restivo, Programmer Analyst
CSC CompuSource, Warren

Ruth Watson, Computer Lab Technician
Kent State University Trumbull Campus, Warren

Lorain County Tech Prep Consortium
Network Communications Cluster
Business/Industry/Labor Representatives

Doreen Bacsi, Network Administrator
R.W. Beckett, North Ridgeville

Roger Crayton, Manager, Technical Services
Invacare, Elyria

Bill Doebele, Electronics Engineer, Hardware/Software Sales
Computers-N-Care, Elyria

Dan Guernsey, Manager, MIS
Alltel, Hudson

Amzad Haque, Microcomputer Support Specialist
Lorain County Community College, Elyria

Bob Hermann, Senior System Designer, Network Specialist
USS/KOBE, Lorain

Dan Hornbeek, Systems Programmer
York International, Elyria

Randy Mallernee, Advisory Technical Analyst, PC Networks
Ohio Edison, Akron

Paul Noble, Network Administrator
NASA Lewis Research Center, Cleveland

Pete Prete, Vice President, Senior Consultant,
Network Design Engineering
Computer Enterprises, Lakewood

Randy Sherer, Information Systems Analyst
Columbia Gas, Norwalk

Miami Valley Tech Prep Consortium
Computer Support Technician
Business/Industry/Labor Representatives

Peter Britton, Director of MIS
Duriron, Dayton

Scott Fife, Technology Services Facilitator
Centerville Schools, Centerville

Steve Holmes, Computer Support Technician
Greene County Career Center

Lucia Kunst, Advanced Application Specialist
Belcan Engineering Group, Inc.

Ken Lackey, Supervisor of Data Processing
Kettering City School District

Gary Porter, Vice President, MIS
Citizens Federal Savings, Dayton

Allen Wilson, Technology Support
Greene County Career Center, Xenia

Jack Wells, Software Specialist
City of Dayton, Dayton

Ohio South Tech Prep Consortium
Business Technologies Cluster
Business/Industry/Labor Representatives

Patrina Adkins, Paralegal
Southeastern Ohio Legal Services, Portsmouth

Doug Boyles, Computer Department
Communication Workers of America, AFL-CIO, Portsmouth

Ron Carr, Accounting/Controller
AAA, Portsmouth

Steve Collins, Financial Secretary
Plumbers & Steam Fitters Local 577, Portsmouth

Myria Denniston, Operations/Office Manager
Mitchellace, Portsmouth

Randy Edwards, Training Coordinator
Dow Chemical Plant, Ironton

Sharon Gannon. Secretary, Department of Social Science
Communication Workers of America, ALF-CIO, Portsmouth

Leo Gillen, Computer Service Engineer
Martin Marietta, Piketon

Connie Gulley, Clerk
Village of New Boston, New Boston

Pam Hall, Secretary D
South Point Ehtanol Plant, South Point

Paul Houston, Branch Manager
First Federal Savings & Loan, Ironton

Dean Jenkins, Finance Director
Mills Pride, Waverly

Trina Johnson, Treasury Assistant
Southern Ohio Medical Center, Portsmouth

Liz Laney, Office Manager
Catanzaro and Rosenberger Law Office, Waverly

Diane Pemberton, Office Manager
Lawrence County JTPA, Ironton

Susan Riggs, Secretary
Ohio Bureau of Employment, Portsmouth

Ohio South Tech Prep Consortium
Business Technologies Cluster
Business/Industry/Labor Representatives
(continued)

Kathy Sexton, Claims Representative
Social Security Administration, Portsmouth

Robert Sorrell, Assistant Vice President & Auditor
First & Peoples Bank, Russell

Stark County Tech Prep Consortium
Business Technologies Cluster
Business/Industry/Labor Representatives

Ginny Adams, Claims Manager
Ameritech, Cleveland

Ed Cironi, Director Information Services
Hoover Company, North Canton

Jon Garaux, Consultant
J.W. Garaux Consulting, Canton

Paul Hardy, Supervisor
Babcock & Wilcox, Barberton

Laura King, MIS Manager
Redicon Corporation, Canton

Alan McClurg, Consultant
McClurg Business Systems, Canton

Larry Miner, Consultant
SEA Group, Canton

Cliff Settle, Manager
Systems Development, Massillon

Tammy Shaw, Business Programmer/Systems Analyst
The Timken Company, Canton

Chris Steward, Supervisor Training Department
Redicon Corporation, Canton

Paul Talbot, POS Manager
Camelot Music, Inc., North Canton

Tom Waechter, Senior Telecom Analyst
The Timken Company, Canton

Upper Miami Valley Tech Prep Consortium
Business Technologies Cluster
Business/Industry/Labor Representatives

Dawn Beelman, Accounting Manager
Precision Custom Products, Inc., Degraff

Beth Evans, Office Management Assistant
Schindler Elevator Corporation, Sidney

Jeff Fannon, Accounting Manager
Clopay Corporation, Russia

Dan Fehrenbach, Manager Financial Accounting
Midmark Corporation, Versailles

Dennis Heiman, Controller
Monarch Machine Tool Company, Sidney

William Horstmann, Owner
WH and Associates, Troy

David Meek, Senior Accounting Clerk
Corning Incorporated, Greenville

Vicki Obringer, Staff Accountant
Alcoa Building Products, Sidney

Amy Shroyer, Administrative Assistant
Clopay Corporation, Russia

Karen Vetter, Office Manager
Prodeva Inc., Jackson Center

Upper Miami Valley Tech Prep Consortium
Computer Technologies Cluster
Business/Industry/Labor Representatives

Kim Carter, Telecommunications Specialist
Time Warner Satellite Services, Lima

Cathy Clark, Information Technology Team Leader
Corning, Inc., Greenville

Anthony Collins, PC Coordinator
Whiteford Foods, Inc., Versailles

Jan Colson, Computer Support Specialist
Provico, Inc., Botkins

Kay Frieders, Administrative Assistant
EMI Corporation, Jackson Center

Kathy Galintine, Information Systems Manager
Greenville Technologies, Inc., Greenville

Matthew Gilfillen, MIS
Witt Plastics, Inc., Greenville

Ric Hausfeld, Computer Specialist
Brookside Laboratories, New Knoxville

Dave Johnson, Lab Facilities Coordinator
Edison Community College, Piqua

Janet Mullen, Accounting Manager
Hammer Graphics, Inc., Piqua

P. Mark Robb, LAN Administrator
BASF, Greenville

Donald Weills, Data Processing Manager
City of Piqua, Piqua

Brad Wildermuth, Computer Support Specialist
Ross Aluminum Foundries, Sidney

Washington-Morgan-Meigs Tech Prep Consortium
Business Technologies Cluster
Business/Industry/Labor Representatives

Michelle Barr, Computer Specialist
Elkem Metals, Marietta

Dottie Beihl, Computer Support Specialist
Bank One, Marietta

Randy Broffman, Data Processing Manager
Fenton Art Glass, Williamstown, West Virginia

Peggy Byers, Coordinator of Systems Control
RJF International, Marietta

Pete Casto, Engineering Assistant
Shell Chemical Company, Belpre

Barb Mincks, Assistant Manager
Marietta City School District, Marietta

Andy Ray, President
Network Communications Systems, Inc., Parkersburg, West Virginia

Candace Ross, Computer Specialist
Theisen, Brock, Frye, Erb, and Leeper Co. LPA, Marietta

Carla Sparks, Accountant Bookkeeper
American River Terminals, Marietta

Lou Swartz, Management Information System Manager
Washington State Community College, Marietta

Akron Area Tech Prep Consortium
Business Technologies Cluster
Education Representatives

Laura Abrashoff, English Faculty
East High School, Akron

Harold Adkins, Business Education Faculty
Stow-Munroe Falls High School, Stow

Lee Branchik, Business Education Faculty
Stow High School, Stow

Susan Carpenter, Business Education Faculty
Maplewood Area Joint Vocational School, Ravenna

Linda Cottman, Business Education Faculty
East High School, Akron

Karen Frary, Mathematics Faculty
Medina Country Career Center, Medina

Augustus L. Harper, Business Management Faculty
Community and Technical College, The University of Akron, Akron

Wendell A. Johnson, Mathematics Faculty
Community and Technical College, The University of Akron, Akron

Nancy Kubinski, Computer Office Technology & Communications Faculty
Medina County Career Center, Medina

Rebecca McCollum, Computer Programming Faculty
Community and Technical College, The University of Akron, Akron

Carol McDonald, Business Education Faculty
Cuyahoga Falls High School, Cuyahoga Falls

Jean Nye, Mathematics Faculty
Maplewood Area Joint Vocational School, Ravenna

Martha Vye, Office Administration Faculty
Community and Technical College, The University of Akron, Akron

Jean Wood, Computer/Accounting Faculty
Cuyahoga Fall High School, Cuyahoga Falls

Kent Trumbull Tech Prep Consortium
Computer Technologies Cluster
Education Representatives

Diane Barton, Biology/Life Science Faculty
Warren G. Harding High School, Parma

Vilma Kolacz-Belanger, Computer Programming/Mathematics/Biology Faculty
Hubbard High School, Youngstown

Jane Buchwalter, Keyboarding/Word Processing/Applied Economics Faculty
Warren G. Harding High School, Warren

Jean Carchedi, Accounting/Business Law/Economics/Keyboarding Faculty
Liberty High School, Lowellville

Thomas Cornicelli, Geometry/Integrated Math II Faculty
Liberty High School, Austintown

Sherry Creighton, Computer Applications Faculty
Trumbull County Joint Vocational School, Boardman

Dan Drescher, Engineering Drawing, Computer Science Faculty
Warren G. Harding High School, Warren

William Flynn, Computer Applications/Programming Faculty
Liberty High School, Canfield

Joe Gallant, Physics Faculty
Kent State University-Trumbull Campus, Warren

William Groff, Integrated Math/Drafting/CADD Faculty
Bloomfield High School, Andover

Nick Heinzer, English Faculty
Liberty High School, Girard

Chris Higgins, Computer Applications Faculty
Bloomfield High School, Sharon

Larry Jones, Computer Technology Faculty
Kent State University-Trumbull Campus, Warren

Donna Kidd, Supervisor
Trumbull County Joint Vocational School, Warren

Carole Kyser, Computer Applications/Mathematics Faculty
Champion High School, Warren

Mark Leiby, Supervisor of Special Programs
Warren City Schools, Warren

Kent Trumbull Tech Prep Consortium
Computer Technologies Cluster
Education Representatives
(continued)

Pam Lubich, Computer Science/Mathematics Faculty
Maplewood High School, Niles

Shirley Moritz, Accounting/Typing/Business Law Faculty
Champion High School, Youngstown

Linda Morrison, Guidance Counselor
Warren G. Harding High School, North Bloomfield

Dana Ormerod, Computer Technology Faculty
Kent State University-Trumbull Campus, Warren

Patrick Pinney, Biology/Human Physiology Faculty
Liberty High School, Youngstown

Naomi Prox, Algebra/Technical Mathematics/Trigonometry Faculty
Warren G. Harding High School, Warren

Patricia Rindy, Typing/Shorthand Faculty
Hubbard High School, Hubbard

Don Snowberger, Computer Coordinator
Lakeview Local Schools, Warren

Karen Toda, Algebra/English Faculty
Warren G. Harding High School, Cortland

Khin Yin, Computer Technology Faculty
Kent State University-Trumbull Campus, Warren

Lorain County Tech Prep Consortium
Network Communications Cluster
Education Representatives

Tom Annable, Engineering Technologies Faculty
Lorain County Community College, Lorain

Brent Betts, Business Faculty
Oberlin High School, Oberlin

Sandra Binggli, Mathematics Faculty
Firelands High School, Firelands

Josie Boone, Business Department Coordinator
Lorain Joint Vocational School, Lorain

Debbie Boroff, Science Faculty
Lorain Joint Vocational School, Lorain

Ed Buck, Trade and Industrial Faculty
Lorain High School, Lorain

Millie Buta, Science Faculty
Elyria City Schools, Elyria

Hikmat Chedid, Engineering Technologies Faculty
Lorain County Community College, Lorain

Harriet Chrulski, Computer/Math Faculty
Firelands High School, Firelands

Leo Citro, Business Education Faculty
Lorain High School, Lorain

Beverly Corts, Business Education Faculty
Firelands High School, Firelands

Caroline Curtis, Computer Information Systems Faculty
Lorain County Community College, Lorain

Rod Davis, Trade and Industrial Faculty
Admiral King High School, Lorain

Lynne DeLong, English Faculty
Avon High School, Avon

Scott Dickson, Industrial Arts Faculty
Avon Lake High School, Avon Lake

Jeff Dininger, Engineering Technologies Faculty
Lorain County Community College, Lorain

Lorain County Tech Prep Consortium
Network Communications Cluster
Education Representatives
(continued)

Carolyn Dycks, Mathematics Faculty
Columbia High School, Columbia

Margaret Elwell, English Faculty
Columbia High School, Columbia

Adoph Faller, Chemistry/Physics Faculty
Brookside High School, Sheffield

Greg Friedman, Computers/Accounting Faculty
Lorain Joint Vocational School, Lorain

Dave Gocinski, Industrial Technology Faculty
Firelands High School, Firelands

Jo Goodsite, Mathematics Faculty
Lorain Joint Vocational School, Lorain

Kathy Gulish, English Faculty
Firelands High School, Firelands

Joyce Harvey, Chemistry/Physics Faculty
Columbia High School, Columbia

Jan Hendricks, English Faculty
Lorain Joint Vocational School, Lorain

Bob Henze, Science Faculty
Avon High School, Avon

Stan Holowicki, Machine Trades Faculty
Admiral King High School, Lorain

Don Huffman, Computer Information Systems Faculty
Lorain County Community College, Lorain

William Hughes, English Faculty
Lorain County Community College, Lorain

Ruth Hull, English Faculty
Avon High School, Avon

Donald Ignatz, Mathematics Faculty
Lorain County Community College, Lorain

Lorain County Tech Prep Consortium
Network Communications Cluster
Education Representatives
(continued)

Chandra Jain, Engineering Technologies Faculty
Lorain County Community College, Lorain

Ann Johnson, Science Faculty
Lorain County Community College, Lorain

Pat Keenan, Mathematics Faculty
Brookside High School, Sheffield

Anna Klimas, Biology Faculty
Columbia High School, Columbia

Charles Kormaransky, Business Education Faculty
Brookside High School, Sheffield

Dick Kormish, Trade and Industrial Coordinator
Lorain Joint Vocational School, Lorain

Jo Ann Kormos, Academic Supervisor
Lorain Joint Vocational School, Lorain

Linda Kovac, English Faculty
Firelands High School, Firelands

Dave Mazzei, English Faculty
Lorain Joint Vocational School, Lorain

Jan McMinn, Computers/Accounting Faculty
Lorain Joint Vocational School, Lorain

Jim McQuown, Mathematics Faculty
Elyria City Schools, Elyria

Tammy Melnyk, Mathematics Faculty
Lorain Joint Vocational School, Lorain

Brad Miller, Industrial Arts Faculty
Brookside High School, Sheffield

Jim Nichols, Communications/English Faculty
Elyria City Schools, Elyria

Craig Norton, Agricultural/Science Faculty
Firelands High School, Firelands

Lorain County Tech Prep Consortium
Network Communications Cluster
Education Representatives
(continued)

June Nowacki, Computer Faculty
Avon High School, Avon

Marilyn Parker, Mathematics Faculty
Firelands High School, Firelands

Bill Pierson, Science Faculty
Elyria City Schools, Elyria

Carol Riddle, English Faculty
Lorain High School, Lorain

Chris Runkle, Science Faculty
Lorain Joint Vocational School, Lorain

Lise Scheuermann, Computer Science/Mathematics Faculty
Brookside High School, Sheffield

Barb Sherman, English Faculty
Lorain High School, Lorain

Chris Smith, Science Faculty
Oberlin High School, Oberlin

Matt Smith, Science Faculty
Firelands High School, Firelands

Penny Szrenyogh, English Faculty
Firelands High School, Firelands

Jean Upson, Computer Information Systems Faculty
Lorain County Community College, Lorain

Glenn Vasiloff, Computer Information Systems Faculty
Lorain County Community College, Lorain

Virginia Waratinsky, Communications/English Faculty
Elyria City Schools, Elyria

Tess Wearsch, Science Faculty
Avon High School, Avon

Diane Wiedenheft, Mathematics Faculty
Elyria City Schools, Elyria

Lorain County Tech Prep Consortium
Network Communications Cluster
Education Representatives
(continued)

Larry Wood, Mathematics Faculty
Columbia High School, Columbia

Miami Valley Tech Prep Consortium
Computer Support Technician
Education Representatives

Gene Arnold, Electronics Faculty
Greene County Career Center, Xenia

Barbarita Barton, Technology Coordinator
Patterson Career Center, Dayton

Lona Bowman, Tech Prep Coordinator
Miami Valley Career Technology Center, Clayton

Steve Brandt, Electronics Faculty
Miami Valley Career Technology Center, Clayton

Bob Chaney, Assistant Professor, Mathematics Department
Sinclair Community College, Dayton

John Ciprian, Science Faculty
Greene County Career Center, Xenia

Barb Collins, English Faculty
Preble Shawnee Local, Camden

Rachel Darding, English Faculty
Patterson Career Center, Dayton

Dottie Falkenstein, Data Processing Faculty
Centerville High School, Centerville

Tom Fourman, Science Faculty
Patterson Career Center, Dayton

Jon Gustafson, Mathematics Faculty
Greene County Career Center, Xenia

Beck Hall, English Faculty
Centerville High School, Centerville

Dorothy Henry, Business Education Faculty
Patterson Career Center, Dayton

Surinder Jain, Chairperson, Electronics Engineering Department
Sinclair Community College, Dayton

Al Jarvis, Electronics Faculty
Patterson Career Center, Dayton

Sharon Johnson, Data Processing Faculty
Miami Valley Career Technology Center, Clayton

Miami Valley Tech Prep Consortium
Computer Support Technician
Education Representatives
(continued)

Jan Kledzik, Mathematics Faculty
Centerville High School, Centerville

Wayne Kledzik, Science Faculty
Centerville High School, Centerville

Joe Labriola, Chairperson, English Department
Sinclair Community College, Dayton

Jay Lane, Mathematics Faculty
Preble Shawnee Local, Camden

Patrick Lee, Electronics Faculty
Stebbins High School, Dayton

Tony Mann, Chairperson, Computer Information Systems Department
Sinclair Community College, Dayton

Rebecca McMahan, Communications Faculty
Greene County Career Center, Xenia

Carol Miller, Business Education Faculty
Preble Shawnee Local, Camden

Tom Mills, Science Faculty
Miami Valley Career Technology Center, Clayton

Harold Pearson, Associate Professor, Electromechanical Engineering Technology
Sinclair Community College, Dayton

Bob Pitts, Electronics Faculty
Warren County Career Center, Lebanon

Denny Thayer, Business Education Faculty
Warren County Career Center, Lebanon

Fred Thomas, Professor/Chairperson, Physics Department
Sinclair Community College, Dayton

Shari Wolf, Mathematics Faculty
Miami Valley Career Technology Center, Clayton

Debby Zaharieff, Data Processing Faculty
Greene County Career Center, Xenia

Ohio South Tech Prep Consortium
Business Technologies Cluster
Education Representatives

Thomas Carnevale, Chair, Department of Mathematics
Shawnee State University, Portsmouth

Karen Crummie, Assistant Professor, Legal Assisting
Shawnee State University, Portsmouth

Carol Delaney, Computer Operator Faculty
Lawrence County Joint Vocational School, Chesapeake

Steve Doster, Associate Professor, Accounting
Shawnee State University, Portsmouth

Joyce Fields, Director, Business/Marketing Programs
Lawrence County Joint Vocational School, Chesapeake

Clem Hartley, Science Faculty
Portsmouth High School, Portsmouth

Vicki Hayslip, Business Technologies Faculty
Pike County Joint Vocational School, Piketon

Ed Hileman, Applied Communications Faculty
Pike County Joint Vocational School, Piketon

Ron Houchin, English Faculty
Fairland High School, Proctorville

Joyce Kiser, Associate Professor, Office Administration
Shawnee State University, Portsmouth

Mark Knapp, Science Faculty
West Portsmouth High School, West Portsmouth

Marc Leeds, Assistant Professor, Education
Shawnee State University, Portsmouth

Brenda Moore, English/Business Faculty
Northwest High School, McDermott

Jan Radabaugh, Computer Education/Business Faculty
South Webster High School, South Webster

Jerry Ruby, Associate Professor, Finance
Shawnee State University, Portsmouth

Micki Stokes, Business Technologies Faculty
Pike County Joint Vocational School, Piketon

Ohio South Tech Prep Consortium
Business Technologies Cluster
Education Representatives
(continued)

Edwin Strehel, Supervisor, Business Program
Scioto County Joint Vocational School, Lucasville

Marsha Walker, Assistant Professor, Office Administration
Shawnee State University, Portsmouth

Kim Wright, Business & Computer Faculty
Western High School, Latham

Stark County Tech Prep Consortium
Business Technologies Cluster
Education Representatives

Jim Barlak, Assistant Professor, Computer Applications Technology
Stark Technical College, Canton

Donna Bille, Mathematics/Science/Computer Programming Faculty
Malvern High School, Malvern

Jeff Cramer, Chemistry Faculty
Stark Technical College, Canton

Sandy Engel, Chemistry/Computer/Science Faculty
Tuslaw Local Schools, Massillon

Bill Games, Biology/Mathematics/Computer Faculty
Minerva High School, Minerva

Christina Hunt, Physics/Mathematics Faculty
R.G. Drage Career Center, Massillon

Jeff Joseph, Mathematics Faculty
R.G. Drage Career Center, Massillon

Susan Mandator, Business Education Faculty
Sandy Valley High School, Magnolia

Denise Mast, English Faculty
Louisville High School, Louisville

Lois McBride, Assistant Professor, Mathematics Faculty
Stark Technical College, Canton

Joe McLaughlin, Associate Professor, Communicative Skills
Stark Technical College, Canton

Barbara Moore, Cooperative Business Education Faculty
Alliance City Schools, Alliance

Dave Richard, Assistant Professor, Computer Application Technology
Stark Technical College, Canton

Fran Stuck, Business Computer Technology Faculty
R.G. Drage Career Center, Massillon

Ron Suchy, Business/Computer Education Faculty
Fairless Local Schools, Navarre

Jim Triffun, Business Education Faculty
Northwest High School, Canal Fulton

Stark County Tech Prep Consortium
Business Technologies Cluster
Education Representatives
(continued)

Jill Yaeger, English Faculty
R.G. Drage Career Center, Massillon

Upper Miami Valley Tech Prep Consortium
Business Technologies Cluster
Education Representatives

Lucy Bailey, Business Education Faculty
Upper Valley Joint Vocational School, Piqua

Laura Baker, Business Education Faculty
Sidney High School, Sidney

Pam Bost, Applied Communications Faculty
Upper Valley Joint Vocational School, Piqua

Peg Buehler, Computer Science/Business Education Faculty
Botkins High School, Botkins

Shirley Card, Applied Mathematics Faculty
Upper Valley Joint Vocational School, Piqua

Robert Cox, Associate Professor, Accounting
Edison Community College, Piqua

Robert Good, Mathematics Faculty
Edison Community College, Piqua

Margie Heitkamp, Business Education Faculty
Greenville High School, Greenville

Anna Hudelson, Associate Professor, Secretarial Office Administration
Edison Community College, Piqua

Pat Muller, Science Faculty
Hardin-Houston Schools, Houston

Claudia Robbins, English Faculty
Sidney High School, Sidney

Roger Scherger, Associate Professor, Accounting
Edison Community College, Piqua

Jean Shaneyfelt, Associate Professor, Marketing
Edison Community College, Piqua

Robert Strayer, Professor of Business
Edison Community College, Piqua

Nancy Stutsman, English Faculty
Hardin-Houston Schools, Houston

Bob Tenney, Mathematics Faculty
Sidney High School, Sidney

Upper Miami Valley Tech Prep Consortium
Business Technologies Cluster
Education Representatives
(continued)

John Willoughby, Business Education Faculty
Hardin-Houston Schools, Houston

Donna Wirz, Science Faculty
Sidney High School, Sidney

Upper Miami Valley Tech Prep Consortium
Computer Technologies Cluster
Education Representatives

Neelima Bhatnagar, Assistant Professor, Microcomputer Applications
Edison Community College, Piqua

Kathy Fogt, Computer Faculty
Sidney High School, Sidney

Barb Heighton, Computer Applications Faculty
Upper Valley Joint Vocational School, Piqua

Miriam Hoffman, Mathematics Faculty
Sidney High School, Sidney

Dave Johnson, Lab Facilities Coordinator
Edison Community College, Piqua

Julie Mack, Applied Mathematics Faculty
Upper Valley Joint Vocational School, Piqua

Connie Mangen, Applied English and Communications Faculty
Upper Valley Joint Vocational School, Piqua

Candice McCabe, English Faculty
Russia High School, Russia

Dennis Myers, Assistant Professor, Microcomputer Applications
Edison Community College, Piqua

Marcus Petitjean, Computer/Industrial Technology Faculty
Russia High School, Russia

Keith Putnam, Science Faculty
Anna High School, Anna

Patti Ross, Computer Applications Technology Faculty
Edison Community College, Piqua

David Sagan, Mathematics/Computer Science Faculty
Greenville High School, Greenville

Don Stephen, English Faculty
Sidney High School, Sidney

Washington-Morgan-Meigs Tech Prep Consortium
Business Technologies Cluster
Education Representatives

Betty Ciccantell, Secretarial Science Faculty
Washington State Community College, Marietta

Deanna Dye, Mathematics Faculty
Warren Local High School, Vincent

Donna Graham, Business Education Faculty
Fort Frye Local High School, Beverly

Debra Hendershot, Secretarial Science Faculty
Washington State Community College, Marietta

Brooke Hunter, Business Education Faculty
Fort Frye Local High School, Beverly

Rita Mayle, English Faculty
Morgan High School, McConnelsville

Dick McCormick, Mathematics Faculty
Washington County Career Center, Marietta

Cindy McKenna, Business Education Faculty
Warren Local High School, Vincent

Maggie Medberry, Business Education Faculty
Morgan High School, McConnelsville

Wendy Reimenschneider, Microcomputer Applications Faculty
Washington State Community College, Marietta

Nancy Ruth, Science Faculty
Warren Local High School, Vincent

Patrick Traikoff, Business Education Faculty
Warren Local High School, Vincent

Karen Weihl, Business Education Faculty
Washington County Career Center, Marietta

Jim Williams, English Faculty
Warren Local High School, Vincent

A Sample TCP

Upper Miami Valley Tech Prep Consortium

Computer Technologies

TECH PREP

"GET SERIOUS . . . ABOUT SUCCESS"

Competency Profile

August 1995

Computer Technologies Business and Industry TCP Participants	Computer Technologies Education TCP Participants
Kim Carter, Telecommunications Specialist Time Warner Satellite Services, Lima	Neelima Bhatnagar, Assistant Professor, Microcomputer Applications Edison Community College, Piqua
Cathy Clark, Information Technology Team Leader Corning, Inc., Greenville	Kathy Fogt, Computer Faculty Sidney High School, Sidney
Anthony Collins, PC Coordinator Whiteford Foods, Inc., Versailles	Barb Heighton, Computer Applications Faculty Upper Valley Joint Vocational School, Piqua
Jan Colson, Computer Support Specialist Provico, Inc., Botkins	Miriam Hoffman, Mathematics Faculty Sidney High School, Sidney
Kay Frieders, Administrative Assistant EMI Corporation, Jackson Center	Julie Mack, Applied Mathematics Faculty Upper Valley Joint Vocational School, Piqua
Kathy Galintine, Information Systems Manager Greenville Technologies, Inc., Greenville	Connie Mangen, Applied English and Communications Faculty Upper Valley Joint Vocational School, Piqua
Matthew Gilfillen, MIS Witt Plastics, Inc., Greenville	Candice McCabe, English Faculty Russia High School, Russia
Ric Hausfeld, Computer Specialist Brookside Laboratories, New Knoxville	Dennis Myers, Assistant Professor, Microcomputer Applications Edison Community College, Piqua
Dave Johnson, Lab Facilities Coordinator Edison Community College, Piqua	Marcus Petitjean, Computer/Industrial Technology Faculty Russia High School, Russia
Janet Mullen, Accounting Manager Hammer Graphics, Inc., Piqua	Keith Putnam, Science Faculty Anna High School, Anna
P. Mark Robb, LAN Administrator BASF, Greenville	Patti Ross, Computer Applications Technology Faculty Edison Community College, Piqua
Donald Weills, Data Processing Manager City of Piqua, Piqua	David Sagan, Mathematics/Computer Science Faculty Greenville High School, Greenville
Brad Wildermuth, Computer Support Specialist Ross Aluminum Foundries, Sidney	Don Stephen, English Faculty Sidney High School, Sidney

TCP Facilitator, Cathy Scruggs **Tech Prep Coordinator, Shirley Moore**

Computer Technologies TCP

Upper Miami Valley Tech-Prep Consortium

NS =	Network Systems Technician/PC Coordinator
MS =	Microcomputer Support Specialist

pg #	Units	NS	MS
2	Communications Literacy	X	X
23	Mathematics Literacy	X	X
36	Science Literacy	X	X
61	Technology Literacy	X	X
63	Professional and Ethical Standards	X	X
65	Basic Personal Computer Concepts	X	X
70	Customer Relations	X	X
71	PC Applications	X	X
78	Operating Systems	X	X
84	Basic Mainframe Concepts	X	X
87	Networks	X	X
97	Software Methodology		X
100	Hardware	X	X
108	Project Management	X	X
110	Problem Resolution and Verification	X	X
111	Teamwork	X	X
114	Supervision	X	X
116	Economic and Business Principles	X	X
118	General Accounting Functions	X	X
127	Employability Skills	X	X
135	Professionalism	X	X

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Subunit: Reading—Structure **Competencies:**					
RS1 # Exhibit knowledge of language structure (computer grammar programs)					
RS2 Recognize that there may be more than one interpretation of reading selections					
RS3 Recognize various literary devices					
RS4 Recognize and discuss literary elements					
RS5 # Develop and use an increasingly sophisticated vocabulary gained through context					
RS6 # Apply knowledge of language structure to reading (to read programs understand language structure)					
RS7 Explain why there may be more than one interpretation of reading selections					
RS8 Recognize effect of literacy devices on meaning					
RS9 Analyze author's use of literary elements					
RS10# Recognize relationship of structure to meaning					

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RS11 Describe various interpretations and meaning levels in reading selections					
RS12 Characterize author's use of literary devices					
RS13 Characterize use of literary techniques					
RS14 Critique a variety of literature with regard to plot, dialogue, theme, setting, and characterization					
RS15* Apply an expanding vocabulary gained through reading					
RS16 Explain various interpretations and meaning levels in reading selections					
RS17 Analyze use of literary techniques (e.g., extended metaphor, simile, personification, hyperbole, pun, alliteration)					
RS18 Understand use of literary devices (e.g., irony, satire, allegory, onomatopoeia)					
RS19 Analyze and synthesize pieces of literature with regard to plot, dialogue, theme, setting, and characterization					
Subunit: Reading—Meaning Construction Competencies:					
RM1 # Demonstrate ability to recognize appropriate pre-reading strategies					

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RM2 Describe effectiveness of a reading selection					
RM3 # Read to clarify personal thinking and knowledge					
RM4 * Support interpretation of text by locating and citing specific information					
RM5 Develop personal response to a variety of literary works					
RM6 Recognize diverse literary interpretations					
RM7 # Engage in self-selected reading activities					
RM8 # Confirm and extend meaning in reading by researching new concepts and facts to keep on top of new things					
RM9 * Self-monitor and apply corrective strategies when communication has been interrupted or lost					
RM10 Use features of literary genres to extend meaning					
RM11 Assess effectiveness of a selection read					
RM12* Use reading as a possible problem-solving strategy to clarify personal thinking and knowledge					

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RM13	Use knowledge of semantic elements (e.g., figurative language, denotation, connotation, dialect) to clarify meaning when reading					
RM14	Predict, recognize, interpret, and analyze themes based on familiarity with author's work					
RM15	Compare and contrast literary genres					
RM16	Assess validity and quality of selection read					
RM17#	Clarify meaning when reading					
RM18	Compare personal reaction to critical assessment of a literary selection					
RM19	Assess validity of diverse literary interpretations					
RM20*	Use reference books to find, evaluate, and synthesize information					
RM21	Identify tone of a literary work					
RM22	Critique validity of diverse literary interpretations					
RM23	Integrate personal reaction to and critical assessment of a literary selection					

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Subunit: Reading—Application **Competencies:**					
RA1 * Select and read material for personal enjoyment and information					
RA2 Read a variety of complete, unabridged works					
RA3 # Employ various reading strategies according to purpose					
RA4 # Participate in selection of books, materials, and topics for literature study groups					
RA5 * Develop and apply knowledge of the interrelationship of concepts					
RA6 # Read selections from a variety of styles and formats, recognizing that style and format influence meaning					
RA7 # Extend value of reading, writing, speaking, viewing, and listening by pursuing, through reading, new concepts and interests developed as a result of these activities					
RA8 Read extensively from a particular author's work and explain elements of author's style					

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Subunit: Reading-Multidisciplinary Competencies:						
RM1	Connect themes and ideas across disciplines through literature					
RM2 #	Read to facilitate learning across curriculum					
RM3 #	Read to develop awareness of human rights and freedom (e.g., Internet)					
RM4 #	Participate actively in a community of learners					
RM5 #	Recognize and explain interaction between literature and various cultural domains (e.g., social technological, political, economic)					
RM6 #	Explore and analyze a variety of cultural elements, attitudes, beliefs, and value structures by men and women of many racial, ethnic, and cultural groups					
RM7 #	Value thinking and language of others					
RM8	Relate literature to historical period about which or in which it was written					
RM9 #	Read to facilitate content learning					

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Subunit: Writing—Structure Competencies:						
WS1 #	Develop and expand a repertoire of organizational strategies (e.g., narration, comparison/contrast, and description) through a practice and discussion					
WS2 #	Clarify word choice according to audience, topic, and purpose					
WS3 *	Locate and correct errors in usage, spelling, and mechanics using a variety of resources					
WS4 #	Recognize information gained from primary and secondary sources					
WS5 *	Develop writing which contains ordered, related, well-developed paragraphs with sentences of varied lengths and patterns					
WS6 #	Use information from a variety of sources to develop an integrated piece of writing					
WS7 #	Evaluate and revise writing to focus on such things as audience, tone, and purpose					
WS8	Recognize differences between documentation and reference list styles					

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WS9 #	Develop extended pieces of writing which contain ordered, related, well-developed paragraphs with sentences of varied lengths and patterns					
WS10#	Select from a repertoire of organization strategies a pattern appropriate to a topic					
WS11#	Synthesize information from a variety of sources					
WS12*	Refine word choice and tone according to audience, situation, and purpose					
WS13#	Appropriately cite information gained from primary and secondary sources					
WS14#	Use style manuals or software to prepare documentation and reference lists					
WS15#	Develop effectively organized pieces of expository writing containing strong voice, clear thesis, and well-developed ideas					
WS16*	Identify organization patterns appropriate to writing topic					
WS17*	Respond to others' suggested revisions to a writing piece					

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Subunit: Writing—Meaning Construction Competencies:						
WM1 *	Demonstrate knowledge of the recursive nature of the writing process by applying it appropriately to various topics, situations, and audiences					
WM2	Develop criteria for writing evaluation using scoring guides and peer/teacher assistance to clarify meaning					
WM3 #	Respond to others' suggested revisions to a piece of writing					
WM4 *	Use word processing, graphics, and publishing aids to construct meaning in writing					
WM5 #	Engage in self-initiated writing activities					
WM6	Incorporate personal criteria with generally accepted standards for writing evaluation					
WM7 *	Evaluate, analyze, and synthesize information for writing					
WM8	Evaluate own writing using personal and established scoring criteria					
WM9	Assess personal/peer revisions to a writing piece					

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WM10* Recognize and refine personal writing styles					
Subunit: Writing—Application Competencies:					
WA1 * Apply appropriate writing techniques suitable for varied writing tasks					
WA2 # Use sentence-combining techniques to improve syntactic fluency and maturity					
WA3 * Write in response to prompted and self-selected topics in practical, persuasive, descriptive, narrative, and expository domains					
WA4 Develop personal voice in writing					
WA5 * Consider audience and purpose for writing					
WA6 Develop criteria for selection and potential development of topic					
WA7 Write in a journal or learning log to clarify personai thinking and knowledge					
WA8 * Apply an expanding vocabulary gained through writing					
WA9 * Make judicious use of reference sources (e.g., dictionary, thesaurus, on-line data base, encyclopedia)					

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WA10*	Demonstrate, an appreciation for aesthetically pleasing language through word choice and style					
WA11#	Apply revising and editing strategies needed for writing task					
WA12#	Vary sentence lengths and patterns					
WA13	Refine personal voice in writing					
WA14#	Vary styles and formats for intended purpose and audience					
WA15*	Apply criteria for selection and development of topic					
WA16	Participate in peer review of writing in progress					
WA17#	Use transitions between sentences, ideas, and paragraphs in writing					
WA18*	Revise and edit papers extensively in preparation for presentation and/or publication					
WA19	Develop a variety of genres					
WA20#	Focus writing and tone on such elements as audience, situation, and purpose					
WA21#	Develop topic fully and appropriately					
WA22*	Use writing process to clarify personal thinking and knowledge					

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WA23# Apply appropriate recursive writing process as suggested by writing task and writer's process					
WA24 Develop an extended piece of writing					
WA25* Revise writing and tone to assure focus on such elements as audience, situation, and purpose					
WA26# Use writing process to write reflectively					
Subunit: Writing—Multidisciplinary Competencies:					
WM1 * Use writing process for learning across curriculum					
WM2 # Use writing process to demonstrate knowledge of need for human rights and freedom					
WM3 # Value and apply collaborative skills in writing process					
WM4 * Write in response to reading, speaking, viewing, and listening					
WM5 # Use multidisciplinary resources in writing projects					
WM6 Use writing process to facilitate learning across curriculum					

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WM7 # Recognize value of and engage in collaboration in writing process					
WM8 # Use communication processes to develop a published writing piece in collaboration with others					
WM9 # Record experiences and observations related to content learning (e.g.,logs)					
WM10# Apply collaborative skills in writing process					
WM11# Write collaboratively with peers					
WM12# Use cross-disciplinary resources in writing projects (use everything)					
Subunit: Listening/Visual Literacy—Structure **Competencies:**					
LS1 Listen to and view a wide variety of genres					
LS2 Become aware of an author's style through listening and viewing a variety of works					
LS3 # Recognize correct and appropriate grammar, diction, and syntax					
LS4 * Expand vocabulary through listening to and viewing varied media					
LS5 # Recognize beauty of language					

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LS6	Enhance recognition of an author's style through listening and viewing a variety of works					
LS7 *	Recognize use and misuse of language in media					
LS8	Refine knowledge of style through listening and viewing multiple works by the same author					
LS9 #	Expand and refine grammar, diction, and syntax through listening					
LS10	Compare authors' styles through viewing and listening to their works					
LS11#	Expand knowledge of complex grammar, diction, and syntax issues manuals					
Subunit: Listening/Visual Literacy—Meaning Construction **Competencies:**						
LM1 *	Develop critical thinking skills necessary to evaluate media and assess oral presentations					
LM2	Compare new oral texts to past experiences and knowledge in order to enhance comprehension					

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LM3	Recognize how rhythmic patterns, silence, and cadences enhance quality of speech and literature					
LM4	Focus listening and viewing on themes and/or plots					
LM5 #	Gather information from listening and viewing experiences to enhance research					
LM6 #	Use critical thinking skills to evaluate media and oral presentations					
LM7	Use prior knowledge and experiences to facilitate comprehension of new oral texts					
LM8	Identify rhythmic and time patterns in speech and literature					
LM9	Identify and analyze themes and/or plots when listening and viewing					
LM10#	Use information gathered from listening and viewing experiences to expand research					
LM11#	Enhance use of critical thinking skills to evaluate media and oral presentations					
LM12#	Consider prior knowledge and experiences when attempting to understand the meaning of new texts					

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LM13 Appreciate rhythmic and time patterns of speech and literature					
LM14# Select viewing and listening materials to support written text					
LM15# Evaluate media and oral presentations analytically and critically					
LM16# Organize prior knowledge and experiences to comprehend new texts					
LM17# Organize and use viewing and listening materials to support written text					
Subunit: Listening/Visual Literacy—Application **Competencies:**					
LA1 * Listen attentively during oral reading					
LA2 # Use media as stimuli for learning and thinking					
LA3 Develop knowledge of structure through art, music, and literature					
LA4 # Use electronic media to enhance and highlight language learning					
LA5 Listen and view for entertainment and enjoyment					
LA6 * Use technology and other media as means of expressing ideas					

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Subunit: Listening/Visual Literacy—Multidisciplinary **Competencies:**					
LM1 * Facilitate learning across curriculum through critical listening and viewing					
LM2 * Engage in individual, small-group, and whole-group listening and viewing activities					
LM3 Develop language arts (e.g., viewing, listening) projects collaboratively					
LM4 * Investigate language and cultural differences through listening and viewing activities					
LM5 * Participate in a community of learners through productive listening					
Subunit: Listening/Visual Literacy—Meaning Construction **Competencies:**					
OS1 # Refine oral communication skills					
OS2 # Demonstrate knowledge of grammar, usage, and syntax when presenting					
OS3 # Select topics and vocabulary suitable to audience					
OS4 * Organize notes and ideas for speaking					
OS5 # Use language imaginatively					

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OS6	Modulate voice to meaning when interpreting literature orally					
OS7 #	Organize notes and ideas for formal, semiformal and informal presentations of information					
OS8 #	Refine speaking techniques for formal, semiformal, and informal settings					
OS9 *	Develop repertoire of organizational strategies for presenting information orally					
OS10 #	Expand vocabulary to fit topic					
OS11 #	Select topics suitable to audience, situation, and purpose					
OS12 #	Select appropriate strategies when organizing notes and ideas for speaking					
Subunit: Oral Communications—Meaning Construction **Competencies:**						
OM1 *	Make connections between prior knowledge and new information for oral presentations					
OM2	Participate in informal speaking activities					

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OM3 * Use interviewing techniques to gather information					
OM4 # Communicate orally to entertain and to inform					
OM5 * Participate in group communication activities					
OM6 # Take and organize notes when preparing speech/presentation					
OM7 # Interpret texts orally to illustrate meaning					
OM8 # Respond to needs of various audiences					
OM9 # Gather and assess information for speaking					
OM10* Communicate orally to inform and persuade					
OM11# Prepare and deliver formal speech/ presentation					
OM12 Participate in a variety of oral interpretations					
OM13# Assess needs of audience and adjust language and presentation according to their knowledge					
OM14# Analyze and synthesize information for speaking					

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OM15 Describe effectiveness of literary selection					
OM16# Describe topic or idea in order to clarify personal/audience thinking					
OM17# Describe topic or idea to clarify meaning for others					
OM18# Analyze and synthesize information gathered from a variety of sources for speaking					
OM19 Describe validity and/or quality of a literary selection and justify selection					
OM20 Interpret orally a variety of literature					
Subunit: Oral Communication—Application Competencies:					
OA1 # Become proficient at using interviewing techniques					
OA2 Give an oral interpretation for a specific audience					
OA3 # Develop and apply oral communication skills for cooperative and/or collaborative learning					
OA4 # Use oral communication for a variety of purposes and audiences (e.g., negotiations, book reviews, rationales)					

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OA5 * Develop and apply decision-making strategies					
OA6 # Practice interviewing techniques					
OA7 # Apply interviewing techniques to purposeful interviews					
OA8 Focus oral interpretation on a specific audience					
Subunit: Oral Communications—Multidisciplinary **Competencies:**					
OM1 # Value thinking and language of others					
OM2 # Develop oral projects collaboratively					
OM3 # Be involved in individual, small-group, and whole-group language activities					
OM4 # Participate actively in a community of learners					
OM5 # Investigate language and cultural differences through oral language activities					

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Subunit: Numbers and Number Relations Competencies:					
NR1 # Compare, order, and determine equivalence of real numbers					
NR2 * Estimate answers, compute, and solve problems involving real numbers					
NR3 * Compare and contrast real number system, rational number system, and whole number system (e.g., binary, hexadecimal, etc.)					
NR4 Extend knowledge to complex number system and develop facility with its operation					
Subunit: Measurement Competencies:					
M1 # Estimate and use measurements					
M2 * Understand need for measurement and probability that any measurement is accurate to some designated specification					
M3 Understand and apply measurements related to power and work					
M4 Understand and apply measurement concepts of distance-rate-time problems and acceleration problems					

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M5	Use real experiments to investigate elasticity, heat, sound, electricity, magnetism, light, acceleration, velocity, energy, and gravity					
M6	Use real-world problem situations involving mass and weight					
M7	Use real-world problem situations involving simple harmonic motion					
M8 *	Establish ratios with and without common units					
M9 *	Construct and interpret maps, tables, charts, and graphs as they relate to real-world mathematics					
M10	Understand and solve rate-change problems					
M11	Understand and solve right triangle relationships as they relate to measurement, specifically to Pythagorean theorem					
M12#	Graph and interpret ordered pairs					
M13	Compute total sales from a variety of items					
M14	Comprehend and compute rates of growth or decay					
M15	Comprehend, compute, and interpret real problems involving annuities					

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M16* Develop an ability to identify real problems and provide possible solutions					
M17* Express and apply different types of measurement scales					
M18 Identify area and volume					
Subunit: Estimation and Mental Computation **Competencies:**					
E1 Use estimation to eliminate choices in multiple-choice tests					
E2 # Use estimation to determine reasonableness of problem situations in a wide variety of applications					
E3 # Estimate shape of graphs of various functions and algebraic expressions					
E4 # Use mental computation when computer and calculator are inappropriate					
Subunit: Data Analysis and Probability **Competencies:**					
D1 * Organize data into tables, charts, and graphs					
D2 Understand and apply measures of central tendency, variability, and correlation					

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D3	Use curve fitting to predict from data					
D4 *	Use experimental or theoretical probability, as appropriate, to represent and solve problems involving uncertainty					
D5 *	Use computer simulations and random number generators to estimate probabilities					
D6 #	Test hypotheses using appropriate statistics					
D7 *	Read, interpret, and use tables, charts, and graphs to identify patterns, note trends, draw conclusions, and make predictions					
D8	Identify probabilities of events involving unbiased objects					
D9 *	Use sampling and recognize its role in statistical claims					
D10*	Design a statistical experiment to study problem, conduct experiment, and interpret and communicate outcomes					
D11#	Describe normal curve in general terms and use its properties					
D12	Create and interpret discrete probability distributions					

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D13	Understand concept of random variable					
D14	Apply concept of random variable to generate and interpret probability distributions, including binomial, uniform, and chi square					
Subunit: Algebra **Competencies:**						
A1 *	Describe problem situations by using and relating numerical, symbolic, and graphical representations					
A2 #	Use language and notation of functions in symbolic and graphing settings					
A3	Recognize and use equivalent zeros of a function, roots and the solution of an equation in terms of graphical and symbolic representations					
A4	Describe and use logic of equivalence in working with equations, inequalities, and functions					
A5 *	Develop graphical techniques of solution for problem situations involving functions					
A6	Explore and describe characterizing features of functions					

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A7	Make arguments and proofs in algebraic settings					
A8	Factor difference of two squares					
A9	Identify slope, midpoint, and distance					
A10*	Explore and combine rational functions					
A11	Explore factoring techniques					
A12	Solve quadratic equations by factoring and formula					
A13	Set up and solve linear equations					
A14	Solve systems of linear equations with two variables					
A15	Describe geometric situations and phenomena using variables, equations, and functions					
A16#	Describe measures of central tendency, mean, median, mode, and variance algebraically and graphically					
A17	Represent inequalities on number line and in coordinate plane					
A18	Use coordinate arguments in making geometric proofs					
A19	Symbolize transformations of figures and graphs					

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A20 Explore geometric basis for functions of trigonometry					
A21 Graph linear functions					
A22 Develop and use vectors to represent direction and magnitude including operations					
A23 Use polar and parametric equations to describe, graph, and solve problem situations					
A24 Represent sequences and series as functions both algebraically and graphically					
A25* Explore recursive functions and procedures using spreadsheets, other computer utilities, and appropriate notions					
A26 Describe and solve algebraic situations with matrices					
A27 Describe and use inverse relationship between functions including exponential and logarithmic					
A28* Analyze and describe errors and error sources that can be made when using computers and calculators to solve problems					

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A29* Decide whether problem situation is best solved using computer, calculator, paper and pencil, or mental arithmetic/estimation techniques					
A30 Explore relationships between complex numbers and vectors					
A31 Make arguments concerning limits, convergence and divergence in context involving sequences, series, and other types of functions					
A32 Represent transformations in plane with matrices					
A33 Contrast and compare algebra's of rational, real, and complex numbers with characteristics of a matrix algebra system					
A34 Construct polynomial approximations of a function over specified intervals of convergence					
A35 Examine complex numbers as zeros of functions					
A36 Translate verbal statements into symbolic language					
A37 Simplify algebraic expressions					
A38 Use laws and exponents (including scientific notation)					

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A39	Expand and extend idea of vectors and linear algebra to higher dimensional situations					
A40	Use the idea of independent basis elements for a vector space and associated fundamental concepts of finite dimensional linear algebra					
A41	Develop and communicate arguments about limit situations					
A42	Use matrices to describe and apply transformations					
A43	Develop and use polar and parametric equations to represent problem situations					
A44	Explore proofs by mathematical induction					
Subunit: Geometry Competencies:						
G1 #	Create and interpret drawings of three-dimensional objects					
G2	Represent problem situations with geometric models and apply properties of figures					
G3	Apply Pythagorean theorem					
G4	Demonstrate knowledge of angles and parallel and perpendicular lines					

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G5 *	Explore inductive and deductive reasoning through applications to various subject areas					
G6	Translate between synthetic and coordinate representations					
G7	Identify congruent and similar figures using transformation with computer programs					
G8	Deduce properties of figures using transformations and coordinates					
G9 *	Use deductive reasoning					
G10	Explore compass and straightedge constructions in context of geometric theorems					
G11	Demonstrate knowledge of and ability to use proof					
G12	Use variety of proof techniques (e.g., synthetic, transformational, and coordinate)					
G13	Use variety of proof formats, including T-proof (i.e., two-column) and paragraph proof					
G14	Explore different proof strategies					
G15	Investigate different proofs of theorems					

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G16	Develop knowledge of an axiomatic system					
G17	Apply transformations and coordinates in problem solving					
G18	Represent problem situations with geometric models and apply properties of figures					
G19	Deduce properties of figures using vectors					
G20	Analyze properties of Euclidean transformations and relate translations to vectors					
G21	Apply vectors in problem solving					
G22	Develop further knowledge of axiomatic systems by investigating and comparing various geometry's					
Subunit: Patterns, Relations, and Functions Competencies:						
P1	Model real-world phenomena with polynomial and exponential functions					
P2 #	Explore relationship between zeros and intercepts of functions					
P3 #	Translate among tables, algebraic expressions, and graphs of functions					

Unit: Mathematics Literacy (Ohio's Mathematics Model 9-12) * = Industry identified these competencies to be taught using applied methods. # = Teachers identified these competencies to be taught using applied methods. **NOTE:** The remaining competencies are to be taught using regular or applied methods.		**10**	**12**	**AD**	**WS**	**LL**
P4 *	Use graphing calculator or computer to generate graph of a function					
P5	Explore relationship between a linear function and its inverse					
P6	Describe and use characteristics of polynomial functions in problem-solving situations					
P7	Explore conic sections and graph using graphing calculator or computer					
P8	Apply trigonometric functions to problem situations involving triangles					
P9	Discover relationships between algebraic description, kind, and properties of conics					
P10	Explore periodic real-world phenomena using sine and cosine functions					
P11	Analyze effects of parameter changes on graphs					
P12*	Use graphing calculator or computer to graph functions					
P13	Develop an knowledge of rational and transcendental functions					
P14	Understand connections between trigonometric and circular functions					

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P15 Use circular functions to model periodic real-world functions					
P16 Solve trigonometric equations and verify trigonometric identities					
P17 Understand connections between trigonometric, exponential, and logarithmic functions and polar coordinates, complex numbers, and series					
P18* Model real-world phenomena with a variety of functions					
P19 Graph using polar coordinates					
P20 Explore graphs in three dimensions					
P21 Explore functions of several variables					
P22* Explore recursive functions using spreadsheets and/or programming languages					

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Subunit: Scientific Inquiry **Competencies:**						
Q1 *	Check the appropriateness and accuracy of measures and computations using various strategies (e.g., estimations, unit analysis, determination of significant figures)					
Q2 *	Use ratios, proportions, and probabilities in appropriate problem situations					
Q3 *	Translate information from and represent information in various forms with equal ease (e.g., tables, charts, graphs, diagrams, geometric figures)					
Q4 #	Use existing algebraic formulas and create new ones in appropriate problem-solving situations					
Q5 *	Estimate and justify probabilities of outcomes of familiar situations based on experimentation and other strategies					
Q6	Invent apparatus and mechanical tools needed to perform unique tasks in various situations					
Q7	Identify, compare, and contrast different modes of inquiry, habits of mind, and attitudes and dispositions					

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Q8 *	Design investigations that are safe and ethical (i.e., obtain consent and inform others of potential outcomes, risks and benefits, and show evidence of concern for human health and safety, concern for non-human species)					
Q9 #	Make and read scale drawings, maps, models, and other representations to aid planning and understanding					
Q10#	Seek elaboration and justification of data and ideas, and reflect on alternative interpretations of the information (PC Coordinator)					
Q11*	Use appropriate units for counts and measures					
Q12*	Create and use databases (electronic and other) to collect, organize, and verify data and observations					
Q13*	Design and conduct investigations with multiple variables					
Q14*	Communicate the results of investigations clearly in a variety of situations					
Q15	Examine relationships in nature, offer alternative explanations for the observations, and collect evidence that can be used to help judge among explanations					

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Q16 Trace the development (e.g., history, controversy, and ramifications) of various theories, focusing on supporting evidence and modification with new evidence					
Q17* Select, invent, and use tools, including analog and digital instruments, to make and record direct measurements					
Q18* Observe and document events and characteristics of complex systems					
Q19 Explain the influence of perspective (e.g., spatial, temporal, and social) on observation and subsequent interpretations					
Q20* Create multiple representations of the same data using a variety of symbols, descriptive languages, mathematical concepts, and graphic techniques					
Q21# Generate testable hypotheses for observations of complex systems and interactions					
Q22 Document potentially hazardous conditions and associated risks in selected homes and public areas					

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Q23	Participate in public debates, relying on documented and verified data to construct and represent a position on scientific issues					
Q24	Construct and test models of physical, biological, social, and geological systems					
Q25	Read, verify, debate, and, where necessary, refute research published in popular or technical journals of science (e.g., Discover, Omni, Popular Mechanics)					
Q26#	Explore discrepant (Did not happen as planned) events and develop and test explanations of what was observed					
Q27	Conduct theory-based research using surveys, observational instruments, and other methods					
Q28*	Modify personal opinions, interpretations, explanations, and conclusions based on new information					
Q29#	Analyze error and develop explanations					

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Q30	Formulate taxonomic schemes based upon multivariate models that help to explain similarities and differences in form, distribution, behavior, survival, and origin of objects and organisms					
Q31	Demonstrate various logical connections between related concepts (e.g., entropy, conservation of energy)					
Q32*	Account for discrepancies between theories and observations					
Q33#	Analyze the changes within a system when inputs, outputs, and interactions are altered					
Q34*	Create, standardize, and document procedures					
Q35#	Determine the sources of significant disparities between the predicted and recorded results and change research procedures to minimize disparities					
Q36	Research, locate, and propose applications for abstract patterns (e.g., fractals, Fibonacci sequences, string theory, orbitals)					

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Q37	Recognize and utilize classification systems for particles, elements, compounds, phenomena, organisms, and others for exploring and predicting properties and behaviors					
Q38#	Suggest and defend alternative experimental designs and data explanations (e.g., sampling, controls, safeguards)					
Q39*	Recognize and communicate differences between questions that can be investigated in a scientific way and those that rely on other ways of knowing					
Q40*	Draw conclusions based on the relationships among data analysis, experimental design, and possible models and theories					
Q41	Suggest new questions as a result of reflection on and discussions about their own scientific investigations					
Q42	Investigate, assess, and comment on strengths and weakness of the descriptive and predictive powers of science					

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Q43	Create new information from representations of data in a variety of forms (e.g., symbols, descriptive languages, graphic formats) utilizing a variety of techniques (e.g., interpolations, extrapolations, linear regressions, central tendencies, correlation's)					
Subunit: Scientific Knowledge Competencies:						
K1	Investigate various types of dynamic equilibrium (e.g., biological, geological, mechanical, chemical)					
K2	Investigate the relationship between the rates of energy exchange and the relative energy level of components with systems (e.g., tropic levels of ecosystems, osmosis, rate of heating and cooling, storms)					
K3	Investigate patterns in the natural world (e.g., heredity, crystalline structures, population and resource distributions, diffraction, dispersion, polarization)					

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K4	Investigate models and theories that help to explain the interactions of components in systems (e.g., conservation of mass, energy, and momentum; food webs; natural selection; entropy; plate tectonics; chaos; relativity; social-psychology)					
K5	Investigate degrees of kinship among organisms and groups of organisms					
K6	Investigate the limits of the definition of life, and investigate organisms and physical systems that exist at or near these limits (e.g. viruses, quarks, black holes)					
K7	Investigate estimates and measurements of a wide range of distances and rates of change					
K8	Investigate the historical development of theories of change over time (e.g., natural selection, continental drift, the big bang, geologic change)					
K9	Investigate physical and chemical changes in living and non-living systems (e.g., photosynthesis, weathering processes, glaciation, thermal effects of materials, energy cells)					

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K10	Investigate simulations of nuclear change (e.g., radioactivity, half life, carbon dating)					
K11	Investigate conservation principles associated with physical, chemical, and nuclear changes					
K12	Formulate descriptions of the impacts of various forms of mechanical and Electromagnetic waves on various organisms on each other over time					
K13	Formulate models and hypotheses for patterns in the natural world (e.g., earth structures, transportation systems, migrations, communications, constellations)					
K14	Formulate explanations for the influences of objects and organisms on each other over time					
K15	Formulate and interpret explanations for change phenomena (e.g., mass extinction's, stellar evolution, punctuated equilibrium, molecular synthesis)					

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K16 Formulate and interpret explanations for the magnitudes of diversity at different periods of geologic time (e.g., mutation, global cataclysms, continental drift, competition, mass extinction's)					
K17 Formulate interpretations of the structure, function, and diversity in a variety of organisms and physical systems (e.g., DNA and RNA variants, nucleons, interaction particles)					
K18 Formulate understandings of geologic time (e.g., millennia, periods, epochs)					
K19 Formulate an understanding of the historical development of the model of the universe					
K20 Formulate explanations and representations of the production, transmission, and conservation of energy in biological and physical systems (e.g., weather, volcanism, earthquakes, electricity, magnetism, cellular respiration)					
K21 Formulate models and hypotheses about patterns in the natural world (e.g., social behavior, molecular structure, energy transformation, entropy, randomness, aging, chaos, hormonal cycles)					

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K22	Formulate interpretations of the relationship between energy exchange and the interfaces between components within systems					
K23a	Formulate estimations for the range of energies within and between various phenomena (e.g., thermal, electromagnetic, thermonuclear, chemical, electrical)					
K23b	Formulate explanations for the historical development of descriptions of motions interactions and transformations of matter and energy (e.g., classical Newtonian mechanics, special and general relativity, chaos)					
K24	Formulate models that can be used to describe fundamental molecular interactions in living and non-living systems (e.g., cell membranes, semiconductors)					
K25	Formulate an understanding of the degree of relationship among organisms and objects based on molecular structure (e.g., proteins, nucleic acids)					

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K26	Formulate hypotheses and models that may account for observable events (e.g., electricity and magnetism, gravitation, atoms, bonding, chemical reactions, quantum effects, energy flow on biological systems, predator-prey relationships)					
K27	Formulate models and hypotheses about change over time (e.g., natural selection, specialization, punctuated equilibrium, phyleytic gradualism, stellar evolution, plate tectonics, radioactive decay, quantum mechanical theory)					
K28	Formulate lists of limitations and propose refinements of standard classification systems (e.g., periodic table, IUPAC, Linnean, standard model)					
K29	Formulate specific cases of limitations and possible exceptions of theories and principles regarding the interactions of moving objects and organisms (e.g., fluid flow in vessels, motion near the speed of light, Heisenberg uncertainty principle, meteorological prediction, local variation and diversity, predicting earthquakes, energy transport in cellular respiration)					

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K30 Formulate plans and contingencies that can be used to accommodate for changes to and stresses on systems (e.g., wildlife and habitat management, corrosion prevention, noise abatement, structure design)					
K31 Formulate models of molecular, atomic, ionic, and subatomic structures and the physical and biological implications of these structures (e.g., genes, nucleons, quarks)					
K32# Formulate estimates for a wide range of measurements and scales (e.g., angstroms to light years; bytes to kilobytes)					
K33 Formulate and interpret representations of time from origin to present accounting for phenomena of scale (e.g., smoothness, punctuation's, chaos)					
K34 Formulate interpretations of the historical development of various theories of possible causes of diversity among physical and biological phenomena (e.g., the works of Aristotle, Mendel, Darwin, McClintock)					

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K35 Formulate models and hypotheses that can be used to explain the interactions of components within technological and ecological systems					
Subunit: Conditions for Learning Science Competencies:					
C1 * Participate actively in dialogue about and resolution of community issues					
C2 Assess information from various countries in the original language or translated form to ascertain the perspectives of many cultures					
C3 Analyze the scientific ideas presented in science fiction stories and films					
C4 * Perform and repeat investigations to verify data, determine regularity, and reduce the impact of experimental error					
C5 Present the results of investigations in a variety of forums					
C6 # Contribute to the decisions regarding topics for investigation					
C7 * Use various creative means to communicate interpretations of scientific ideas, concepts, phenomena, and events					

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C8	Consider the scientific thinking and language of others					
C9 *	Individually and collaboratively produce clearly written representations of investigative results					
C10#	Fulfill responsibilities as part of a research group					
C11	Select and utilize resources by various criteria (e.g., efficiency, effectiveness, health, safety) that are appropriate to the investigations being conducted by groups					
C12	Present persuasive argument based on the scientific aspects of controversial issues					
C13*	Collect, store, retrieve, and manipulate information with available technologies alleges that may range from hand processes up through computer applications					
C14	Investigate social issues with a scientific perspective (e.g.,human rights, wellness, economics, futurism, environmental ethics)					

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C15#	Keep journals of observations and inferences made over an extended period of time and reflecting upon the impact of these recorded ideas on their thinking and actions					
C16	Examine the intellect, perspectives, and ethics of notable scientists					
C17	Collect and analyze observations made over extended periods of time and compare these to scientific theories					
C18	Create presentations of scientific understandings using diverse modes of expressions					
C19	Conduct formal scientific debates in the classroom					
C20	Wonder about the likelihood of events that may occur by chance or coincidence					
C21	Plan and conduct field trips and experiences for small and large groups					
C22	Analyze the historical context which leads to and has lead to scientific theories					
C23	Seek information on topics of personal scientific interest from a variety of sources					

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C24	Conduct learner-developed investigations independently and collaboratively over periods of week and months					
C25#	Listen attentively and critically to presentations of scientific information made by others					
C26	Conduct analyses of propaganda related to scientific issues					
C27	Perform investigations that require observations over varying periods of time					
C28	Experience scientific concepts as interpreted by other cultures through multimedia and local and global specialists					
C29#	Access appropriate technology to perform complicated, time-consuming tasks					
C30	Relate historical accounts of science to the cultural context in which they were written					
C31	Work as a contributing member of a collaborative research group					

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C32	Examine the influences of social and political structures and realities that contribute to inquiry about scientific issues					
C33*	Use technology (e.g., desktop publishing, teleconferencing, networking) to communicate scientific ideas					
C34	Explore and analyze a variety of perspectives on science (e.g., works by men and women of many racial, ethnic, and cultural groups)					
C35	Lead groups of learners of various ages in designing, planning, and conducting science activities					
C36#	Respect the scientific thinking of others and self					
C37	Recognize and contrast different epistemologies					
C38	Develop possible courses of action in response to scientific issues of local and global concern					
C39#	Determine the validity of research conclusions in relation to the design, performance, and results					

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C40	Develop multimedia presentations of group and individual research projects and investigations appropriate for a variety of audiences and forums					
C41	Produce interesting and scientifically correct stories and present them using various modes of expression					
C42#	Reflect on the ideas and content found in their own journal records					
C43*	Examine ambiguous results and formulate explanations					
C44	Recognize and synthesize the contributions to scientific thought of individuals from many cultures					
C45	Construct models and simulations of the component structures and functions of living and non-living entities					
C46	Lead multi-age groups in the examination of and planned resolution for scientific issues					
C47	Recognize and choose members of research teams based upon the merit of their ideas and skills					
C48#	Construct a portfolio of products, documentation, and self-evaluations of his/her own abilities, skills, and experiences					

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C49	Synthesize scientific information from a variety of sources					
C50	Evaluate and prioritize scientific issues based upon risk-benefit analyses					
C51	Refining scientific skills from a variety of experiences					
Subunit: Applications for Science Learning Competencies:						
A1 #	Answer student-determined questions by designing databases and drawing inferences from the analyses of the information in these data bases					
A2	Make personal behavior decisions by interpreting information that has a scientific basis					
A3	Propose courses of action that will validate and demonstrate personal understandings of scientific principles					
A4 *	Guide other learners in their understanding of the interactions of technologies and society at various periods in time					
A5	Promote and carry out practices that contribute to a sustainable environment					

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A6	Study and propose improvements in public services and systems in their community					
A7	Choose consumer materials utilizing personal and environmental risk and benefit information					
A8 *	Make inferences and draw conclusions using databases, spreadsheets, and other technologies					
A9 *	Do simple trouble-shooting on common electrical and mechanical systems, identifying and eliminating possible causes of malfunctions					
A10	Construct devices that perform simple, repetitive actions					
A11	Investigate the functionality of various geometric shapes in the natural world and the designed world (e.g., translations from spherical to plane representations cause distortions, triangular shapes contribute to rigidity and stability in structures, round shapes minimize boundary for a given capacity)					
A12*	Make decisions regarding personal and public health					

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A13	Evaluate the social and ecological risks and benefits resulting from the use of various consumer products					
A14*	Analyze the contributions of advances in technology through history to his/her everyday life					
A15	Identify and reduce risks and threats to a sustainable environment					
A16*	Extend the limits of human capabilities using technological enhancements					
A17	Use and recognize various propaganda techniques					
A18*	Solve unique problems using the results of systematic analyses					
A19	Choose everyday consumer products that utilize recent innovation and pass appropriate performance criteria					
A20	Refine personal career interests through investigations of the diversity of manufacturing, research, service, and invention processes					
A21	Predict and investigate the working of toys and tools while controlling and manipulating variables (e.g., friction, gravity, forces)					

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A22*	Write, follow, modify, and extend instructions (e.g., equations, algorithms, formulas, flow diagrams, illustrations)					
A23#	Create products, make inferences, and draw conclusions using databases, spreadsheets, and other technologies					
A24	Predict various scenarios and propose solutions to community issues using scientific information (e.g., actuarial tables, census data, topographic maps, incidence data, climatic data)					
A25	Use scientific evidence to consider options and formulate positions about the health and safety of others and him/herself					
A26*	Search for, use, create, and store objects and information using various strategies and methods of organization and access					
A27	Research and write environmental impact statements of his/her own design					
A28	Compare school-based science perspectives with those gained through cutting-edge technological applications					

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A29	Design management plans for natural and human-altered environments (e.g., woodlots, patios, lots, lawns, farmlands, forests)					
A30	Refine personal career interests					
A31*	Promote public awareness of the interaction of technology with social issues					
A32	Advocate and propose courses of action for local and global scientific issues using global networks					
A33#	Use appropriate technologies to prepare and present the findings of investigations incorporating tables, graphs, diagrams, and text					
A34	Make informed consumer choices by evaluating and prioritizing information, evidence, and strategies					
A35	Develop an informed point-of-view that allows for validation or refutation of the scientific statements and claims of advocated before pursuing courses of action (e.g., contributing support, signing petitions,casting votes)					

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A36 Differentiate between observations and inferences in the exploration of evidence related to personal, scientific, and community issues					
A37 Develop and write environmental impact and safety and hygiene management plans					
A38* Use technology to collect, analyze, and communicate information (e.g., electronic networks, desktop publishing, remote sensing, graphing calculators, satellite telemetry, and others)					
A39 Design, construct, and market inventions					

Unit: Technology Literacy * = Industry identified these competencies to be taught using applied methods. # = Teachers identified these competencies to be taught using applied methods.		**10**	**12**	**AD**	**WS**	**LL**
Competencies:						
T1 *	Demonstrate a systems view of technology based on the interdependence of social, political, economic, and ecological systems					
T2 #	Assess the career, family, and personal development implications of technological change					
T3 *	Demonstrate continuous learning via technology					
T4 *	Demonstrate global appreciation for technology's potential effects on cultures, geographic areas, and the environment					
T5 *	Apply historical perspective on technology to the development and use of new technologies					
T6 *	Apply diverse technologies to store, access, process, create, and communicate information needed to solve problems					
T7 *	Apply legal principles and ethical conduct to the use of technology					
T8 *	Demonstrate competency in mathematics, science, social sciences, communication, and computer skills through the analysis, design, and evaluation of technological systems					

Unit: Technology Literacy * = Industry identified these competencies to be taught using applied methods. # = Teachers identified these competencies to be taught using applied methods.		**10**	**12**	**AD**	**WS**	**LL**
T9 *	Analyze the potential of alternative technological systems to solve problems and/or to extend human capabilities					
T10*	Use a variety of tools, materials, and equipment in solving problems and extending human capabilities					
T11*	Assess risks and benefits of technological developments from an ecological, economic, social, and political perspective					
T12*	Value human diversity as part of a team in suggesting, designing, and testing solutions to technological problems					

Unit: Professional and Ethical Standards	10	12	AD	WS	LL
Competency: Explain responsibilities of the computing professional	I	R	P		✓
Competency Builders: Explain the need for professional and ethical standards					
Explain responsibility of the individual to apply ethical standards					
Identify responsibility to client(s) or employer(s)					
Identify responsibility to profession					
Identify responsibility to self					
Explain importance of conflict resolution					
Competency: Describe employee accountability	I	R	P		✓
Competency Builders: Describe self-management					
Explain management-by-objectives* (definition to be added)					
Explain importance of planning, both long-term and short-term					
Explain importance of evaluating progress					
Explain importance of reporting progress					

Unit: Professional and Ethical Standards	**10**	**12**	**AD**	**WS**	**LL**
Competency: Describe intellectual property	**I**	**R**	**P**		✓
Competency Builders: Explain legal ownership of proprietary assets produced by the computing professional					
Explain rights of the originator					
Explain rights of the public					
Explain patent					
Explain copyright					
Explain licenses (e.g., single-user, multi-user)					
Competency: Apply professional and ethical standards	I	R	P		✓
Competency Builders: Identify computing industry's standards					
Describe computing industry's code of ethics					
Explain ethics established by computing societies					
Apply ethics established by computing societies					

Unit: Basic Personal Computer Concepts	10	12	AD	WS	LL
Competency: Explain use of personal computers in business	I	R	P		
Competency Builders: Describe the impact of computer use on individuals and businesses					
Identify basic applications of computers in business					

Unit: Basic Personal Computer Concepts	10	12	AD	WS	LL
Competency: Demonstrate computer literacy	I	R	P		✓
Competency Builders: Identify different types and sizes of computers					
Identify computer components					
Explain flow of information					
Define input, processor, output, and storage units					
Differentiate between parallel and serial ports					
Identify use of storage media (e.g.; hard disk, CD-ROM, floppy disk, tapes)					
Define the function of Memory (RAM and ROM)					
Define hard disk					
Differentiate between hard disk and RAM					
Explain differences between conventional, expanded, and extended memory					
Define electronic units of measure					
Describe a multimedia system					
Describe communications systems					
Identify CAD and its applications					
Define software types, functions, and applications of each (e.g., database, spreadsheet, etc.)					
Use menu system to execute software					

Unit: Basic Personal Computer Concepts	**10**	**12**	**AD**	**WS**	**LL**
Competency: Describe personal computer internal operations					
Competency Builders: Explain how data is stored in main computer memory					
Explain how a computer system executes program instruction					
Explain electronic units of measure and how they represent amounts of data					
Identify data storage techniques					
Identify types of memory					
Competency: Apply operating system concepts	I	R	P		✓
Competency Builders: Explain disk management (directories and subdirectories)					
Demonstrate the following commands: copy, delete, rename files, make change and remove directories					
Use disk operating system to format disk					
Define prompt function					

Unit: Basic Personal Computer Concepts	**10**	**12**	**AD**	**WS**	**LL**
Competency: Maintain hardware and software		**I**	**P**		✓
Competency Builders: Use appropriate reference materials					
Evaluate hardware and software					
Recommend hardware and software					
Schedule routine hardware maintenance					
Install/update software					
Correct malfunction(s)					
Maintain usage logs					
Inventory hardware and software					
Install/update hardware					
Install PC applications					
Make user aware of PC applications					

Unit: Basic Personal Computer Concepts	**10**	**12**	**AD**	**WS**	**LL**
Competency: Use binary arithmetic	**I**	**R**	**P**		
Competency Builders: Identify features of positional numbering systems					
Identify mathematical forms of notation					
Perform number system conversion (e.g., binary to decimal, decimal to binary, decimal to octal, octal to binary, binary to octal)					
Perform mathematic operations (e.g., add, subtract, multiply, and divide binary numbers) Use specially coded systems					
Identify numbering system used with most digital equipment					
Demonstrate binary code for decimal numbers 0 through 9					
Identify system that reduces degree of error in digital-to-analog conversion					

Unit: Customer Relations	**10**	**12**	**AD**	**WS**	**LL**
Competency: Demonstrate positive relations with customers/clients	I	R	P	✓	✓
Competency Builders: Explain internal/external customer concepts					
Identify importance of new and repeat customers					
Identify customer needs and wants					
Provide prompt and courteous service					
Resolve customer inquiries and complaints and/or refer customer to appropriate person					
Document customer interaction					
Identify importance of and how to solicit customer feedback					
Competency: Perform scheduling functions	R	P			
Competency Builders: Create calendar/schedule					
Maintain appointment calendars					
Process requests for appointments					
Verify appointments					

Unit: PC Applications	**10**	**12**	**AD**	**WS**	**LL**
Competency: Explain software applications	**I**	**R**	**P**		✓
Competency Builders: Describe need for and purpose of software					
Describe need for application software					
Describe different types of software applications					
Explain advantages and disadvantages of various software applications					
List software sources					
Explain existence of copyright laws for software					

Unit: PC Applications	10	12	AD	WS	LL
Competency: Perform word processing functions	I	P	R		✓
Competency Builders: Use appropriate reference materials					
Keyboard efficiently by touch (e.g., key pad)					
Initialize diskette					
Prepare backup file					
Maintain backup file					
Update spelling dictionary and spell check					
Perform document functions (e.g., locate, rename, delete, save, retrieve, copy)					
Perform formatting functions (e.g., set margins and tabs, center, underline, bold, cut and paste)					
Use edit features					
Use sort features					
Add page numbers to document					
Add headers and footers					
Print files, pages, screens, and blocks of text					
Verify accuracy of output					
Define word processing terminology					
Explain functions of word processing software					
Explain word processing applications					
Create a document					
Save a document to disk					
Retrieve a document from disk					
Edit an existing document					

Unit: PC Applications	10	12	AD	WS	LL
Describe word-wrap					
Print a document					
Create glossary file					
Store boilerplate (i.e., generic information used repeatedly) material					
Compose documents at keyboard					
Tabulate multiple columns					
Prepare new documents from existing ones					
Merge selected copy with new information					
Prepare various types of table options					
Index text					
Format text					
Integrate database, spreadsheet, and graphics files					
Convert documents from one system to another					
Demonstrate use of computer thesaurus					

Unit: PC Applications	10	12	AD	WS	LL
Competency: Use spreadsheet packages	I	P	R		✓
Competency Builders: Define basic spreadsheet terminology					
Identify components of spreadsheets					
Describe implementation of spreadsheet operations in business scope					
Execute an electronic spreadsheet					
Enter data, formulas, and functions					
Differentiate between labels and numbers					
Compare absolute and relative addressing					
Speculate using "what if . . ." questions					
Sequence keystrokes in the creation of a macro					
Create database within spreadsheet and perform data query functions					
Move around in spreadsheet and correct errors					
Format spreadsheet					
Create and enhance graphs (e.g., style, color, value)					
Print graphs					
Save previously saved files					
Load previously saved files					
Replicate cells using copy commands					
Use electronic spreadsheet to complete business application					
Use spreadsheet to plan financial strategies					

Unit: PC Applications	10	12	AD	WS	LL
Competency: Use database packages	I	P	R		✓
Competency Builders: Define terms used in database systems					
Describe common functions of database systems					
Identify components of database systems (e.g., fields, records)					
Use database package to create, input, edit, and display fields and records					
Analyze structure of database files					
Perform calculations with a database file					
Alter structure of database file					
Sort records based on multiple fields					
Query records for specific information					
Identify advanced database technology					
Use appropriate reference materials					
Create relational database					
Enter elements (data) into database					
Proofread database					
Edit database					
Design report formats					
Apply database management system (DBMS) commands					
Print reports using data from multiple databases					
Use database files with other application software					
Verify accuracy of output					
Write conational statements (macros, etc.)					

Unit: PC Applications	**10**	**12**	**AD**	**WS**	**LL**
Competency: Perform desktop publishing functions	**I**	**P**	**R**		**✓**
Competency Builders: Define desktop publishing					
Explain word processing functions in desktop publishing					
Use appropriate reference materials					
Use desktop publishing terms					
Use desktop publishing software					
Use graphic design and layout functions of desktop publishing					
Design publications					
Merge word-processing, graphics, database, and spreadsheet files					
Proofread documents					
Edit documents					
Save documents					
Retrieve documents					
Print documents using various output devices					

Unit: PC Applications	**10**	**12**	**AD**	**WS**	**LL**
Competency: Perform computer business graphics and presentations	**I**	**P**	**R**		**✓**
Competency Builders: Define purpose and types of graphics and presentations					
Use appropriate reference materials					
Create graphics and presentations					
Proofread graphics and presentations					
Edit graphics and presentations					
Save graphics and presentations					
Retrieve graphics and presentations					
Print graphics to various output devices					
Verify accuracy of output					
Use graphic functions to create files, input data, process data, and produce output					
Use graphics files with other application software					

Unit: Operating Systems	**10**	**12**	**AD**	**WS**	**LL**
Competency: Describe operating systems		I	P	✓	✓
Competency Builders: Describe microcomputer operating systems					
Describe minicomputer operating systems					
Describe mainframe operating systems					
Describe network operating systems					
Describe how commands handle tasks in operating systems					
Describe various input/output systems					
Describe the purpose of operating system utilities					
Differentiate between a compiler and an interpreter					
Describe the processing that occurs when an interpreter is used					
Describe the processing that occurs when a compiler is used					
Competency: Explain central processing unit (CPU) control		I	P		✓
Competency Builders: Explain CPU processes					
Explain CPU concurrency					
Explain CPU scheduling					
Explain CPU multitasking					
Explain CPU multiprocessing					

Unit: Operating Systems	10	12	AD	WS	LL
Competency: Describe memory management		I	P		✓
Competency Builders: Describe functions of primary memory					
Describe functions of virtual memory (e.g., paging and segmentation)					
Describe functions of extended memory					
Describe functions of expanded memory					
Describe functions of cache memory					
Competency: Explain auxiliary storage management		I	P		✓
Competency Builders: Identify auxiliary storage media					
Describe operational characteristics of storage media					
Describe storage capacities of storage media					
Describe retrieval methods of storage media					
Differentiate between files and directories					
Differentiate between management devices (e.g., disk, tape, CD-ROM)					

Unit: Operating Systems	**10**	**12**	**AD**	**WS**	**LL**
Competency: Store media		I	P	✓	✓
Competency Builders: Identify need for data library					
Use appropriate reference materials					
Retrieve stored media (e.g., on-line, off-line, permanent, off-site)					
File stored media (e.g., on-line, off-line, permanent, off-site)					
Initialize media					
Catalog media					
Maintain supplies					
Maintain media library					
Maintain backup records					
Maintain company and/or government standards for media security					
Maintain archives of company records required by policy or law					
Competency: Explain security issues	I	P		✓	✓
Competency Builders: Define backup and recovery					
Explain disaster planning					
Define authentication					
Describe encryption techniques					
Describe viruses and worms					
Describe vaccines					
Explain operating system penetration					

Unit: Operating Systems	10	12	AD	WS	LL
Competency: Maintain security requirements		I	P	✓	✓
Competency Builders: Implement security procedures					
Apply business ethics					
Follow security rules, regulations, and codes					
Document security procedures					
Perform security checks					
Competency: Describe management of virus protection	I	R	P		✓
Competency Builders: Recognize viruses					
Detect viruses					
Troubleshoot viruses					
Prevent viruses					
Manage viruses					
Implement preventative procedures; scheduled regular anti-virus checks					
Describe different types of anti-virus applications					
Competency: Open system			P		✓
Competency Builders: Differentiate between proprietary and open system architecture					
Explain X/OPEN					
Explain purpose of Open Software Foundation					
Explain purpose of UNIX International					
Explain purpose of Corporation for Open Systems International					

Unit: Operating Systems	**10**	**12**	**AD**	**WS**	**LL**
Competency: Operate system	**I**	**R**	**P**	✓	✓
Competency Builders: Define job, batch, and job step					
Describe data requirements					
Use appropriate reference materials					
Perform power-up and log-on procedures					
Demonstrate basic programming skills					
Use console device to interact with and respond to system messages					
Secure supplies and resources					
Follow processing procedures for each application/job					
Run application/job					
Describe scheduling priority					
Describe transmittal form and transmittal log					
Develop an audit trail					
Handle materials and equipment in a responsible manner					
Use electronic data interchange (EDI)					

Unit: Operating Systems	10	12	AD	WS	LL
Competency: Maintain system		I	P	✓	✓
Competency Builders: Use appropriate reference materials					
Monitor system status and performance					
Run diagnostics					
Respond to system messages					
Back up system					
Report computer system malfunction(s)					
Report software malfunction(s)					
Fix recoverable problems					
Maintain security					
Maintain computer log					
Perform backup procedure(s)					
Perform preventive maintenance					
Follow log-off and power-down procedure(s)					
Perform preventative maintenance procedures					
Change hardware					
Install software packages					
Restore system					

Unit: Basic Mainframe Concepts	**10**	**12**	**AD**	**WS**	**LL**
Competency: Explain mainframe use in business			**P**	✓	✓
Competency Builders: Describe the impact of computer use on individuals and businesses					
Identify different types and sizes of computers					
Define input, processor, output, and storage units					
Identify applications of computers in business					
Identify automated business systems, equipment components, and electronic media					
Competency: Describe mainframe operations	**I**	**R**	**P**		✓
Competency Builders: Identify methods of data storage techniques (e.g., Types of magnetic media such as tape, disk optical, CD Rom cassette)					
Explain how main computer memory is used					
Explain how a computer system executes program instruction					
Explain how a computer system manipulates data					
Explain electronic storage capacity (e.g., meg, gig, byte)					
Explain electronic units of measure and how they represent data					
Identify computer operator functions/duties					

Unit: Basic Mainframe Concepts	10	12	AD	WS	LL
Competency: Describe interface techniques		I	P	✓	✓
Competency Builders: Identify elements of user interface					
Trace evolution of user interface software					
Illustrate various forms of menus					
Describe graphical user interface (GUI)					
Competency: Explain information processing cycle		I	P		✓
Competency Builders: Define operating systems					
Describe the difference between data files and program files					
Contrast internal and external commands					
Differentiate among interactive, transaction-oriented, and batch processing					
Specify role data plays in information processing and how it is organized					
Describe processing capabilities of computer operations					
Specify roles of systems, procedures, and personnel in information processing					
Explain functions of input, output, revision, distribution, storage, and reproduction					
Explain the multitasking capabilities of the computer (e.g., virtual memory, disk, etc.)					

Unit: Basic Mainframe Concepts	10	12	AD	WS	LL
Competency: Apply programming and design concepts	**I**	**R**	**P**	✓	✓
Competency Builders: Identify programming languages and history					
Explain programming theory (e.g., flow chart, documentation)					
Explain compilers					
Demonstrate a function					
Demonstrate a library					
Demonstrate a subroutine					
Demonstrate a system calls					
Demonstrate knowledge of file and table processing					

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Unit: Networks	10	12	AD	WS	LL
Competency: Describe networks		I	P		
Competency Builders: Define multiuser systems					
Differentiate between local and wide area networks					
Define functions of a local area network (LAN)					
Define functions of a wide area network (WAN)					
Differentiate between network operating systems and data distribution systems					
Identify advantages and disadvantages of various network operating systems					
Describe networking alternatives					
Differentiate between a LAN and PBX or shared-processor system					
Describe conditions needed to select a network as the best solution for resource management					
Explain why a physical site must be chosen before selecting networking equipment					
Competency: Explain communication standards		I	P		✓
Competency Builders: Identify the seven layers of the International					
Organization Standard's Open System					
Interconnection (OSI) Model					
Describe each OSI layer, including their interconnectivity					
Identify software standards for subnet, presentation layers, and file servers					

Unit: Networks	**10**	**12**	**AD**	**WS**	**LL**
Competency: Describe network structures		**I**	**P**		✓
Competency Builders: Differentiate topologies (e.g., hierarchial, ring, star)					
Differentiate architecture					
Explain layering					
Apply standards and protocols					
Competency: Explain network transmission and media		I	P		✓
Competency Builders: Explain signals					
Explain patterns					
Explain error detection and correction					
Explain speed of transmission					
Explain use of media					
Explain use of equipment					

Unit: Networks	10	12	AD	WS	LL
Competency: Explain network connectivity and interoperability		I	P		✓
Competency Builders: Identify equipment connecting devices (e.g., routers, hubs, repeaters)					
Differentiate between sync and async devices					
Identify software connecting devices					
Identify media connecting devices					
Identify type of interoperability (e.g., peer-to-peer, peer-to-host)					
Identify problems of mixed vendor network implementation					
Describe internetworking solutions					
Describe cabling schemes and alternatives					
Identify network topologies					
List characteristics of a network interface card (NIC)					
List pros and cons of network interface cards					
List pros and cons of network servers					
Explain why internetting is useful or necessary					
Describe levels at which internetting can occur					
Identify protocols used for remote interconnecting and when each should be used					
List common pitfalls when networking microcomputers with mainframes					
Identify methods used to evaluate emulators					
Describe mainframe gateways					
List advantages and disadvantages of using a PC for backup procedures					

Unit: Networks	10	12	AD	WS	LL
Competency: Describe network operating systems		I	P		✓
Competency Builders: Identify responsibilities of a network operating system					
Define criteria used to evaluate network operating systems					
Explain installation procedure for network operating systems					
Explain commands needed to use network operating systems					
Define criteria used to describe network servers					
Competency: Describe potential networking problems with applications software			P		✓
Competency Builders: Describe potential hard disk compatibility problems					
Differentiate between site and single user licenses					
Describe necessary precautions included in programs used on networks for version compatibility					

Unit: Networks	10	12	AD	WS	LL
Competency: Explain network management			P		✓
Competency Builders: List steps in mapping a network					
Explain why files must be organized according to owners, users, and privileges					
Describe common standards for setting up and naming files					
List criteria used to determine if a file should be network accessible					
Identify methods to increase performance					
Define hierarchical directory					
Explain methods used to determine how many servers should be used					
State reasons for channel and cable bottlenecks					
Competency: Explain network security		I	P		✓
Competency Builders: Explain need for data protection					
Identify common backup devices					
Explain criteria for selecting a tape system					
Differentiate between hard and soft errors					
Contrast streaming and file-by-file backup systems					
Explain process for archiving files					
Explain necessity for network security					
Identify levels of network security and reasons for their existence					

Unit: Networks	10	12	AD	WS	LL
Competency: Explain installation procedures		I	P		✓
Competency Builders: Explain why an installation log is necessary					
Identify methods of distributing cable, including modeling examples					
Identify problems associated with cable installation					
Describe types of cable, cable connectors, and grounding techniques					
Explain cable testing and tolerance levels					
Identify sources of interference and include methods to overcome each					
Competency: Use network knowledge		I	P	✓	✓
Competency Builders: Use electronic/voice/multi-media mail					
Share files					
Use dial-in access					
Make backups					
Share resources					
Explain software control					
Apply security and authentication					

Unit: Networks	10	12	AD	WS	LL
Competency: Perform network maintenance and diagnostics			P		○
Competency Builders: Execute network diagnostics program for software					
Execute network diagnostics program for hardware					
Explain role of network manager					

Unit: Networks	10	12	AD	WS	LL
Competency: Apply network operations		I	P	✓	✓
Competency Builders: Assess user needs					
Identify which network operating system to use					
Demonstrate applications used on networks					
Explain how the network protocols work together					
Operate system in a multi-user environment					
Describe various networks and their compatibility					
Build synchronous transmission circuit using a modem					
Build a synchronous transmission circuit using a modem					
Connect PCs to form a network					
Connect two PC networks					
Perform file to file copy in a PC network					
Implement print queue in a PC network					
Configure file server in a PC network					
Connect PC to mini or mainframe					
Link mixed vendors (e.g., PC to Mac)					
Interconnect via backbone network					
Build small ethernet or token ring network					

Unit: Networks	**10**	**12**	**AD**	**WS**	**LL**
Competency: Administer network		**I**	**P**	✓	✓
Competency Builders: Explain network manager duties					
Use appropriate reference materials					
Apply current network concepts and technology					
Select access control and security					
Outline resource management					
Install cabling					
Install network					
Attach computers and peripherals to network					
Configure network					
Analyze network operations					
Check physical and virtual connections					
Modify network					
Change computer hardware					
Apply standards					
Acquire licensing					
Plan disaster recovery					
Address protocols (e.g., ethernet, token ring, Arcnet)					
Install network manager software					
Install software packages					
Respond to system messages					
Troubleshoot system					
Run software applications					
Perform system analysis					

Unit: Networks	**10**	**12**	**AD**	**WS**	**LL**
Perform preventative maintenance					
Monitor and maintain server resources					

Unit: Software Methodology	**10**	**12**	**AD**	**WS**	**LL**
Competency: Solve fundamental software methodology problems	**I**	**R**	**P**	✓	✓
Competency Builders: Explain basic concepts of algorithm development and programming					
Create test data for algorithmic solution					
Test reliability of implementing algorithmic solution					
Complete project (given formal specifications) requiring incorporation of control structures					
Explain principles of modular top-down design					
Solve problems involving basic control structures (e.g., sequence, selection, iteration)					
Describe different data types (e.g., numeric, alphanumeric)					
Explain software design process (i.e., specification through implementation and testing)					
Solve problems involving program implementation					

Unit: Software Methodology	10	12	AD	WS	LL
Competency: Describe tools used to design software systems		I	P		✓
Competency Builders: Explain modular design and programming, including specifications and design tools					
Explain module implementation					
Explain module testing					
Explain module documentation					
Explain module maintenance					
Explain data normalization					
Explain computer-aided software engineering (CASE)					
Explain object-oriented programming (OOP)					
Differentiate build verses buy decisions					
Competency: Define software requirements		I	P		✓
Competency Builders: Identify requirements					
Develop informal specifications					
Use interviewing strategies to gather information					
Develop formal specifications					
Describe different system design models					
Develop documentation					
Apply computing standards					
Apply security measures					

Unit: Software Methodology	10	12	AD	WS	LL
Competency: Design software		I	P	✓	✓
Competency Builders: Explain process design					
Apply implementation strategies (e.g., top-down, module testing)					
Debug software system					
Trace software system					
Test software system					
Test data					
Apply computing standards					
Apply security measures					

Unit: Hardware	**10**	**12**	**AD**	**WS**	**LL**
Competency: Explain standards			P		✓
Competency Builders Identify OSI, IEEE, ISO, and CCITT standards					
Identify standard setting bodies and their proclamations					
Explain conformance and API's					
Explain numeric data representation (i.e., binary, octal, hexadecimal)					
Explain non-numeric data representation (i.e., text, alphanumeric)					
Competency: Describe computing site environment		I	P		✓
Competency Builders: Identify environmental requirements					
Identify power requirements and power supplies					
Identify ergonomic issues					
Identify structural capacities					
Identify local building codes (e.g., fire, electrical)					

Unit: Hardware	10	12	AD	WS	LL
Competency: Differentiate among architecture and processor types			P		✓
Competency Builders: Describe architecture and processors of microcomputers					
Describe architecture and processors of minicomputers					
Describe architecture and processors of mainframes					
Explain instruction sets					
Describe architecture and processors of parallel processing					
Competency: Analyze computer systems architecture			P		✓
Competency Builders: Discuss evolving nature of the computing architecture					
Describe the principles and operation of addresses and interrupts and identify direct memory access data handling system					
Describe the principles and operation of volatile and non-volatile memory					
Describe the principles and operation of advanced memory techniques					
Define individual system blocks					
Draw systems configuration in block detail					
Interpret computer acronyms					
Describe priorities and interrupts at systems level					
Define functions of advanced memory techniques (e.g., virtual, pipeline, cache)					

Unit: Hardware	**10**	**12**	**AD**	**WS**	**LL**
Competency: Describe operation of chips and boards		I	P		✓
Competency Builders: Describe chip configuration and structure					
Describe operation of memory boards, including chip sizes					
Describe operation of mother boards					
Describe operation of coprocessor boards (e.g., math, graphics, FAX, modems, voice)					
Describe operation of controller cards					
Describe operation of network interface cards					
Competency: Describe operation of connectivity devices		I	P		✓
Competency Builders: Describe operation of baluns					
Describe operation of multiplexers, MODEMS, CODECS					
Describe operation of switches, gateways, bridges, routers, brouters, repeaters					
Describe operation of test equipment (e.g., protocol analyzers)					

Unit: Hardware	10	12	AD	WS	LL
Competency: Explain operation of microprocessor system			P		✓
Competency Builders: Describe components of microprocessor and their functions					
Describe principles and operation of BUS concepts (e.g., VESA, EISA)					
Describe principles and operation of types of memory circuits					
Identify operating systems (e.g., DOS, OS/2, UNIX, Win 95)					
Describe microprocessor instructions sets					
Describe principles and operation of microprocessor machine code					
Identify types of input and output devices and peripherals					
Describe principles and operation of storage devices					
Interface input and output ports to peripherals					
Identify central processing unit building blocks and their uses					
Identify the levels of computer languages					

Unit: Hardware	**10**	**12**	**AD**	**WS**	**LL**
Competency: Troubleshoot a microcomputer system			P		✓
Competency Builders: Draw system configuration in block detail					
Identify priorities and interrupts at system level					
Operate computer system architecture					
Repair computer system architecture					
Demonstrate use of volatile and non-volatile memory					
Repair or replace volatile and non-volatile memory					

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Unit: Hardware	**10**	**12**	**AD**	**WS**	**LL**
Competency: Describe operation of peripherals	**I**	**R**	**P**		✓
Competency Builders: Identify peripherals and operating requirements of each					
Explain purpose of input devices (e.g., keyboard, mouse, scanners, pens, bar code readers, credit/debit/smart cards, voice, video, gloves, joysticks)					
Describe operation of output devices (e.g., voice, printers, plotters, printer sharing units, SCSI interface)					
Describe operation of multimedia (e.g., television, music)					
Describe operation of storage devices (e.g., tape, disk, CD-ROM, removable media drive)					
Identify primary devices used for personal computer auxiliary storage					
Describe how data is stored on diskettes, hard drives, CD-ROM, optical drives)					
List speed and storage capacities of computer auxiliary storage devices					
Describe attributes of diskettes ,hard disks,CD-ROM, and opticals regarding speed and storage capacity					
List types of disk storage, CD-ROM, and opticals used with large computer systems					
Define role of tape storage, disks, CD-ROM, and opticals in relation to personal and large computers					
Describe security issues					

Unit: Hardware	10	12	AD	WS	LL
Identify types of card and paper-tape equipment and interface controllers					
Define printer types and interface controllers					
Explain the operation of typical magnetic tape equipment and interface controllers					
Describe disk equipment, interface controllers, and audio interface					
Define environmental requirements for peripherals and media					
Competency: Operate peripheral devices	I	R	P		✓
Competency Builders: Use appropriate reference materials					
Load media devices					
Start media devices					
Unload media devices					
Set up print devices					
Operate print devices					
Monitor peripheral equipment operations					
Perform routine maintenance on peripheral devices					
Demonstrate output processing, bursting, decollating, splitting, and shredding					
Transmit via modem					
Receive via modem					
Search a CD-ROM library					
Print information from a CD-ROM library					

Unit: Hardware	**10**	**12**	**AD**	**WS**	**LL**
Competency: Repair peripheral equipment	I	R	P		✓
Competency Builders: Troubleshoot disk equipment and interface controllers					
Troubleshoot display terminals and interface controllers, including touch screens					
Troubleshoot printers and interface controllers, including laser printers					
Troubleshoot mouse					
Troubleshoot bar code scanner					
Troubleshoot CD-ROM					
Competency: Install computer system (i.e., monitor, keyboard, disk drive, and printer)		I	P	✓	✓
Competency Builders: Configure system					
Verify system					
Print copy of root directory to printer					
Document system installation					

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Unit: Project Management	**10**	**12**	**AD**	**WS**	**LL**
Competency: Plan projects	**I**	**R**	**P**	⊔	✓
Competency Builders: Identify scope, purpose and objectives					
Apply Gantt charts					
Apply network diagrams					
Apply critical path method (CPM)					
Use project management software programs					
Set milestones					
Competency: Implement and evaluate projects	I	R	P	✓	✓
Competency Builders: Monitor milestones while maintaining project flexibility					
Report project progress when necessary					
Analyze performance					
Draw project management conclusions					
Communicate accomplishments					

Unit: Project Management	**10**	**12**	**AD**	**WS**	**LL**
Competency: Demonstrate skills in technical writing and reporting	**I**	**R**	**R**	✓	✓
Competency Builders: Use data books and cross reference/technical manuals					
Identify type of report needed					
Compile relevant data					
Design charts and graphs					
Outline reports					
Write reports					
Present reports					
Compose technical memoranda and manuals					

Unit: Problem Resolution and Verification	**10**	**12**	**AD**	**WS**	**LL**
Competency: Appraise situations	**R**	**P**	**R**	✓	✓
Competency Builders: Listen to the problem					
Define or describe concerns or problems					
Competency: Analyze actual problems	**I**	**R**	**R**	✓	✓
Competency Builders: Define possible causes of problem					
Identify severity of problem and timeframe needed to fix problem					
Recreate problem, if needed					
Verify cause					
Set priorities					
Competency: Analyze decisions		**I**	**R**	✓	✓
Competency Builders: Identify alternative solutions					
Evaluate alternative solutions					
Assess risks					
Make final choice					
Minimize negative impact of decisions (e.g., make backups)					
Document actions taken					
Evaluate impact of decisions					
Competency: Perform audit	**R**	**R**	**P**	✓	✓
Competency Builders: Identify preventive actions					
Take contingent actions					
Communicate actions taken					

Unit: Teamwork	**10**	**12**	**AD**	**WS**	**LL**
Competency: Describe teamwork	**I**	**P**	**R**		✓
Competency Builders: Define employee empowerment					
Differentiate work groups (e.g., department-based) and teams					
Identify conditions essential to teamwork					
Explain influence of company culture on teamwork					
Identify appropriate situations for using teams					
Define team structures (e.g., cross functional, quality improvement, task force, quality circles)					
Identify team building concepts					
Describe characteristics and dynamics of teams					
Identify characteristics of effective team members					
Identify responsibilities team members					
Identify methods of involving each member of a team					
Explain how individuals from various backgrounds contribute to work-related situations (e.g., technical training, cultural heritage)					
Explain the purpose of facilitators					
Define consensus					

Unit: Teamwork	10	12	AD	WS	LL
Competency: Demonstrate teamwork	**I**	**R**	**P**		**✓**
Competency Builders: Identify purpose of team and intended goal (include time frames)					
Structure team around purpose					
Contribute to efficiency and success of team					
Work toward individual and team milestones (e.g., set goals)					
Analyze results of team project					
Facilitate a team meeting					
Assist team member(s) with problem					
Monitor time frame					
Communicate team objectives and actions					
Competency: Use teamwork to solve problems (using all items under the Competency: demonstrate teamwork)	I	R	P		✓
Competency Builders: Identify appropriate situations for using teams					
Use problem-solving process in a team setting					
Identify quality management processes/techniques					
Identify quality assurance processes*/techniques*					
Prepare presentation					
* definitions needed					

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Unit: Teamwork	**10**	**12**	**AD**	**WS**	**LL**
Competency: Conduct team meetings	**I**	**R**	**P**		**✓**
Competency Builders: Plan agenda and distribute prior to meeting, if appropriate					
Schedule meeting and location					
Invite appropriate personnel					
Solicit outside speakers as needed					
Assign someone to take minutes					
Make introductions					
Invite questions and comments and group participation					
Focus on agenda items					
Assign appropriate action, time frame and accountability to tasks					
Monitor time					
Close meeting on time					
Publish minutes in timely manner					

Unit: Supervision	10	12	AD	WS	LL
Competency: Manage human resources	R	R	R		✓
Competency Builders: Define management and leadership styles					
Describe human relations skills					
Describe performance evaluations					
Describe conflict resolution					
Adhere to company policies regarding discrimination and harassment					
Explain procedure for handling grievances					
Competency: Manage projects	I	R	P		✓
Competency Builders: Identify needs					
Set priorities					
Research information					
Develop goals and objectives					
Develop strategic plan					
Develop project budget					
Apply forecasting techniques					
Apply prioritizing techniques					
Schedule work assignments					
Apply quality measures and counter measures					
Collect data					
Analyze data					
Act on data					
Monitor project progress					
Monitor budget					
Meet project timelines					

Unit: Supervision	10	12	AD	WS	LL
Competency: Conduct training		I	R	✓	✓
Competency Builders: Secure training resources, materials, and equipment					
Assess training needs					
Train employees					
Evaluate progress					
Provide appropriate feedback					
Obtain training effectiveness feedback					

Unit: Economic and Business Principles	**10**	**12**	**AD**	**WS**	**LL**
Competency: Explain basic business concepts	I	R	P		✓
Competency Builders: Identify functions of business					
Explain role of management					
Explain role of labor					
Explain concept of service as a product					
Explain role of administration					
Explain role of operations					
Identify role of company objectives					
Identify importance of ethical business practices					
Identify types of ownership					
Identify role of company role/mission					
Explain business organizations and functions					
Describe business reporting and information flow					
Map interface of departmental functions					
Identify communication channels (e.g., formal, informal)					
Competency: Illustrate legal concepts		I	R		✓
Competency Builders: Identify/communicate ramifications of legal documents					
Explain laws relating to working conditions, wages and hours, civil rights, social security, disability, and unemployment insurance					

Unit: Economic and Business Principles	**10**	**12**	**AD**	**WS**	**LL**
Competency: Serve customers/clients	I	P		✓	✓
Competency Builders: Identify importance of customer					
Identify customer services to provide					
Relate to customers in timely fashion					
Identify customer needs and wants					
Gather complete and accurate information					
Apply customer service concepts and terminology					
Identify methods for addressing dissatisfied customers					

Unit: General Accounting Functions	**10**	**12**	**AD**	**WS**	**LL**
Competency: Apply arithmetical skills to accounting	**R**	**P**			
Competency Builders: Compute cash discounts for various terms					
Compute trade discounts					
Compute extension, sales tax, and totals of sales slips					
Compute markups and markdowns					
Calculate rates of trade and cash discounts					
Calculate unit prices given quantity prices					
Calculate percentages					
Calculate costs of portions of units					
Solve problems involving fractions, decimals, and percentages					
Solve commission problems					
Solve finance-charge problems					
Solve annual percentage rate problems					

Unit: General Accounting Functions	**10**	**12**	**AD**	**WS**	**LL**
Competency: Apply accounting principles	**I**	**P**	**R**	✓	
Competency Builders: Define accounting terminology					
Define journals and ledgers					
Identify basic accounting principles					
Identify basic accounting applications					
Identify computer accounting applications					
Identify financial control procedures					
Explain increases and decreases in accounts					
Explain periodic reporting procedures					
Prepare income statement					
Prepare balance sheet columns					
Prepare cash flow statement					
Interpret balance sheets					
Interpret income statements					
Interpret cash-flow analysis statements					

Unit: General Accounting Functions	**10**	**12**	**AD**	**WS**	**LL**
Competency: Perform manual accounting functions	**I**	**R**	**P**	✓	
Competency Builders: Explain use of record keeping in relation to business and economic applications					
Use appropriate reference materials					
Analyze transactions					
Use "T" accounts to label increases, decreases, and balances					
Record transactions					
Process receivables					
Monitor expense accounts					
Process payables					
Prepare budgets					
Process purchases					
Prepare comparative (actual vs. budget) income statement					

Unit: General Accounting Functions	**10**	**12**	**AD**	**WS**	**LL**
Competency: Perform automated accounting functions	I	R	P	✓	
Competency Builders: Use appropriate reference materials					
Operate equipment					
Key data on numeric keyboard					
Import or download data from computer records					
Scan data from various media					
Apply general and specialized accounting functions					
Proofread accounting records and statements					
Edit accounting records and statements					
Save accounting records and statements					
Retrieve accounting records and statements					
Print accounting records and statements					

Unit: General Accounting Functions	10	12	AD	WS	LL
Competency: Use computers in accounting	I	R	P	✓	
Competency Builders: Use integrated software package for simulation of accounting cycle					
Set up chart of accounts for general ledger					
Set up accounts payable and accounts receivable ledgers					
Add accounts to general and subsidiary ledgers					
Delete accounts to general and subsidiary ledgers					
Input account balances					
Enter journal transactions					
Process journal transactions					
Prepare trial balance					
Verify data and correct errors					
Generate reports					

Unit: General Accounting Functions	**10**	**12**	**AD**	**WS**	**LL**
Competency: Perform spreadsheet functions	**I**	**R**	**P**	✓	
Competency Builders: Explain computer spreadsheet analysis					
Use appropriate reference materials					
Operate equipment					
Create or format spreadsheet					
Enter formulas					
Move cells and ranges					
Enter data on spreadsheet					
Import or download data to spreadsheet					
Apply data sort, data query, data fill, and data distribution					
Export spreadsheet files to word processing, graphics and database files					
Import spreadsheet files to word processing, graphics and database files					
Proofread spreadsheet data					
Edit spreadsheet data					
Verify accuracy of output					
Save spreadsheet					
Retrieve spreadsheet					
Print spreadsheet					
Use spreadsheet functions to create files, input data, process data, and produce output					
Use spreadsheet files with other application software					

Unit: General Accounting Functions	10	12	AD	WS	LL
Competency: Perform payroll functions		I	R	✓	✓
Competency Builders: Use appropriate reference materials					
Collect payroll data					
Process payroll					
Comply with company policies and procedures					
Comply with government and legal requirements					
Maintain records and forms					
Monitor personnel costs					
Competency: Perform banking functions	I	P		✓	
Competency Builders: Use appropriate reference materials					
Prepare checks, deposit slips, and withdrawal slips					
Maintain checkbook					
Balance checkbook					
Maintain petty cash					
Balance petty cash					
Explain automated banking transactions					
Prepare banking records					
Maintain banking records					

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Unit: General Accounting Functions	10	12	AD	WS	LL
Competency: Process cost accounting information		I	P	✓	
Competency Builders: Define cost accounting, direct materials, direct labor and overhead					
Define cost allocation methods					
Identify source documents					
Compute direct materials by job or process					
Compute direct labor by job or process					
Compute overhead rates to apply to jobs or processes					
Compute cost of goods produced					
Compute cost of goods sold					
Journalize cost of goods produced and sold entries					
Post cost of goods produced and sold entries					
Compute cost of inventories					
Prepare cost production reports					
Prepare related records of job or process costs					

Unit: General Accounting Functions	**10**	**12**	**AD**	**WS**	**LL**
Competency: Process end-of-fiscal-period information	**I**	**P**	**R**	**✓**	**✓**
Competency Builders: Prepare worksheet					
Prepare trial balance					
Foot ledger accounts and compute balances					
Prove equality of debits and credits					
Locate errors					
Record adjustments					
Make appropriate extensions					
Journalize basic adjusting, closing, and reversing entries					
Post basic adjusting, closing, and reversing entries					
Prepare basic income statement					
Prepare basic balance sheet					
Prepare basic cash flow statement					

Unit: Employability Skills	**10**	**12**	**AD**	**WS**	**LL**
Competency: Develop a career plan	**R**	**P**			✓
Competency Builders: Identify current interests and aptitudes					
Identify common barriers to employment					
Describe strategies to overcome employment barriers					
Locate resources for finding employment					
Research job trends					
Identify career options					
Identify advantages and disadvantages of career options					
Identify job requirements					
Identify education/training opportunities					

Unit: Employability Skills	10	12	AD	WS	LL
Competency: Prepare for employment	I	P	R		✓
Competency Builders: Identify traditional and non-traditional employment sources					
Identify present and future employment opportunities					
Research job opportunities, including non-traditional careers					
Compare salary ranges and benefit packages					
Compile occupational profile					
Identify rights and responsibilities of equal employment opportunity laws					
Design resume and cover letter					
Target resume					
Secure references					
Identify generic and specific employment tests (e.g., civil service exam; drug screening)					
Use follow-up techniques to enhance employment potential					
Demonstrate legible written communication skills using correct grammar, spelling, punctuation, and concise wording					
Describe methods for handling illegal questions on job application forms and during interviews					
Write letter of application					
Investigate prospective employer					
Explain critical importance of personal appearance, hygiene, and demeanor					
Interpret job description					

Unit: Employability Skills	10	12	AD	WS	LL
Demonstrate appropriate interview question and answer techniques					
Demonstrate methods for handling difficult interview questions					
Evaluate job offers					
Write letter of acceptance					
Write letter of declination					
Competency: Evaluate positive self-esteem as an employability skill	R	P	R		✓
Competency Builders: Identify factors that affect self-esteem					
Compare effects of low self-esteem and high self-esteem					
Identify strategies to promote positive self-esteem					
Competency: Prepare personal budget	I	R	P		✓
Competency Builders: Describe need for personal management records					
Balance checkbook					
Identify tax obligations					
Analyze how credit affects financial security					
Compare types and methods of investments					
Compare types and methods of borrowing					
Compare types and methods of insurance					
Compare types of retirement options/plans					
Identify discriminatory vs. non-discriminatory expenditures					

Unit: Employability Skills	**10**	**12**	**AD**	**WS**	**LL**
Competency: Demonstrate job retention skills	**R**	**R**	**P**	✓	✓
Competency Builders: Identify employer expectations regarding job performance, work habits, attitudes, personal appearance, and hygiene					
Exhibit appropriate work habits and attitude					
Demonstrate ability to set priorities					
Identify behaviors to establish successful working relationships					
Identify alternatives for dealing with harassment, bias, and discrimination based on race, color, national origin, sex, religion, handicap, or age					
Identify opportunities for advancement					
List reasons for termination					
List consequences of being absent frequently from job					
List consequences of frequently arriving late for work					
Demonstrate interpersonal relations skills					
Demonstrate negotiation skills					
Demonstrate teamwork					
Follow chain-of-command					

Unit: Employability Skills	**10**	**12**	**AD**	**WS**	**LL**
Competency: Explain work ethic	**R**	**R**	**P**		✓
Competency Builders: Define work ethic					
Identify factors that influence work ethic					
Differentiate between law and ethics					
Describe how personal values are reflected in work ethic					
Describe how interactions in the workplace affect personal work ethic					
Describe how life changes affect personal work ethic					

Unit: Employability Skills	**10**	**12**	**AD**	**WS**	**LL**
Competency: Exhibit appropriate work ethic	R	R	R	✓	✓
Competency Builders: Use time-management techniques					
Avoid personal activity during work hours					
Attend work as scheduled					
Adhere to company and/or governmental policies, procedures, rules, and regulations					
Exercise confidentiality					
Demonstrate appropriate human relations skills					
Adhere to rules of conduct					
Accept constructive criticism					
Offer constructive criticism					
Take pride in work					
Resolve conflict					
Manage stress					
Avoid sexual connotations and harassment					
Adjust to changes in the workplace					
Demonstrate punctuality					
Assume responsibility for personal decisions and actions					
Take responsibility for assignments					

Unit: Employability Skills	**10**	**12**	**AD**	**WS**	**LL**
Competency: Apply decision-making techniques in the workplace	**I**	**R**	**P**	**✓**	**✓**
Competency Builders: Identify decision to be made					
Identify ownership of decision to be made					
Identify possible alternatives and their consequences					
Make decisions based on facts, legality, ethics, goals, and/or corporate culture					
Apply time factor(s)					
Present decision to be implemented					
Evaluate decision made					
Take responsibility for decision					
Competency: Apply problem-solving techniques in the workplace	R	R	P	✓	✓
Competency Builders: Identify problem					
Select appropriate problem solving tools/techniques					
Identify problem causes					
Identify possible solutions and their consequences					
Utilize resources to explore possible solutions to problem					
Contrast advantages and disadvantages of each solution					
Identify appropriate action					
Evaluate results					

Unit: Employability Skills	10	12	AD	WS	LL
Competency: Exhibit characteristics for job advancement	R	R	R	✓	✓
Competency Builders: Display positive attitude					
Demonstrate knowledge of position					
Perform quality work					
Adapt to changing situations and technology					
Demonstrate capability for different positions					
Identify characteristics of effective leaders					
Identify opportunities for leadership in work place/community					
Display creative abilities and initiative to affect change in workplace					
Participate in continuing education/training program					
Explain purpose of supervision, self-discipline and performance evaluation					
Identify appropriate response(s) to criticism from employer, supervisor, or other employees					
Display awareness of corporate culture					
Prepare for job setbacks					

Unit: Professionalism	10	12	AD	WS	LL
Competency: Project professional image	I	R	R	✓	✓
Competency Builders: Define professionalism					
Exhibit professional appearance					
Exhibit professional manners					
Project professional attitude					
Identify individuals' vital role in organization					
Exhibit proper etiquette in professionally-related situations					
Competency: Achieve individual and professional goals	I	R	R	✓	✓
Competency Builders: Set flexible, realistic, and measurable goals					
Identify potential barriers to achieving goals					
Identify strategies for addressing barriers to goal achievement					
Breakdown long-term goals into short-term goals					
Prioritize goals					
Make commitment to goals					
Adjust goals					
Obtain support for goals					
Reward goals achievement					

Unit: Professionalism	**10**	**12**	**AD**	**WS**	**LL**
Competency: Support community well-being	I	R	R	✓	✓
Competency Builders: Identify environmental, educational, and social issues					
Participate in social and/or community activities					
Competency: Achieve organizational goals	I	R	R	✓	✓
Competency Builders: Evaluate personal goals in relation to organizational goals					
Monitor progress by evaluating feedback					
List responsibilities in relation to organization goals					
Accomplish assigned tasks					
Exercise responsibility in relation to organizational goals					
Set appropriate personal performance standards					
Communicate goals with supervisor and peers					
Demonstrate knowledge of products and services					
Promote organizational image and mission					

Unit: Professionalism	**10**	**12**	**AD**	**WS**	**LL**
Competency: Demonstrate positive human relations	I	R	R	✓	✓
Competency Builders: Identify personality types of self and other					
Identify various management styles					
Support employer expectations					
Support employer decisions					
Accept constructive criticism					
Give constructive feedback					
Adapt to changes in work place					
List factors to consider before resigning					
Write letter of resignation					
Competency: Manage stressful situations	R	R	R	✓	✓
Competency Builders: Accept stress as part of daily life					
Identify personal and professional factors contributing to stress					
Describe physical and emotional responses to stress					
Evaluate positive and negative effects of stress on productivity					
Identify strategies for reducing stress					
Implement strategies to manage stress					
Create strategies for developing and maintaining support systems					

Unit: Professionalism	**10**	**12**	**AD**	**WS**	**LL**
Competency: Analyze effects of family on work and work on family	I	R	R		✓
Competency Builders: Identify how family values, goals, and priorities are reflected in work place					
Identify responsibilities and rewards associated with paid and non-paid work					
Identify responsibilities and rewards associated with families					
Explain how family responsibilities can conflict with work					
Explain how work can conflict with family responsibilities					
Explain how work-related stress can affect families					
Explain how family-related stress can affect work					
Identify family support systems and resources					
Identify work-related support systems and resources					
Communicate with family regarding work					

Unit: Professionalism	**10**	**12**	**AD**	**WS**	**LL**
Competency: Develop lifelong learning skills	**I**	**R**	**R**		✓
Competency Builders: Define lifelong learning					
Identify factors that cause need for lifelong learning					
Analyze effects of change					
Identify reasons why goals change					
Describe importance of flexibility and adaptability					
Evaluate need for continuing education/training					

Unit: Professionalism	10	12	AD	WS	LL
Competency: Manage professional development	I	R	R	✓	✓
Competency Builders: Identify new career opportunities					
Modify career goals as needed					
Participate in continuing education/training opportunities					
Document continuing education/training					
Read profession-related manuals, technical journals, and periodicals					
Attend meetings, workshops, seminars, conferences, and demonstrations					
Participate in professional organizations					
Build personal/professional mentor relationship					
Build personal/professional support system					
Build professional network					
Strengthen communication skills					
Strengthen leadership skills					
Strengthen management skills					

Business/Computer Technologies Cluster Tech-Prep Competency Profile Matrix

(Shaded areas indicate core units.)

AS = Accounting Specialist
FM = Financial Management Assistant
OM = Office Management Specialist
PL = Paralegal
MI = Management Information Specialist
CP = Computer Programmer/Analyst
IS = Information Support Specialist
MA = Microcomputer Applications Specialist
CS = Computer Support Technician
CC = Computer (PC/Network) Coordinator
NT = Network Systems Technician
TS = Telecommunications Specialist

UNIT	AS	FM	OM	PL	MI	CP	IS	MA	CS	CC	NT	TS
Communications Literacy	X	X	X	X	X	X	X	X	X	X	X	X
Mathematics Literacy	X	X	X	X	X	X	X	X	X	X	X	X
Science Literacy	X	X	X	X	X	X	X	X	X	X	X	X
Technology Literacy	X	X	X	X	X	X	X	X	X	X	X	X
Employability Skills	X	X	X	X	X	X	X	X	X	X	X	X
Professionalism	X	X	X	X	X	X	X	X	X	X	X	X
Teamwork	X	X	X	X	X	X	X	X	X	X	X	X
Professional and Ethical Standards	X	X	X	X	X	X	X	X	X	X	X	X
Economic and Business Principles	X	X	X	X	X	X	X	X	X	X	X	X
Customer Relations	X	X	X	X	X	X	X	X	X	X	X	X
Problem Analysis	X	X	X	X	X	X	X	X	X	X	X	X
Project Management	X	X	X	X	X	X	X	X	X	X	X	X
Technical Documentation	X	X	X	X	X	X	X	X	X	X	X	X
Basic Personal Computer Concepts	X	X	X	X	X	X	X	X	X	X	X	X
Packaged PC Applications	X	X	X	X	X	X	X	X	X	X	X	X
General Office Functions	X	X	X	X	X	X	X	X		X		
Office Technology	X	X	X	X	X	X	X	X		X		

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UNIT	AS	FM	OM	PL	MI	CP	IS	MA	CS	CC	NT	TS
General Accounting Functions	X	X	X	X	X	X	X	X	X	X	X	X
Specialized Accounting Functions	X	X			X	X						
Business Law	X	X		X								
Legal Office Procedures				X								
Computer Operations	X	X	X		X	X	X			X		
Software Methodology						X	X			X		
Operating Systems			X			X	X		X	X	X	X
Application Programming and Design						X	X	X	X	X		
Network Operations	X				X	X	X		X	X	X	X
Basic Mainframe Concepts					X	X	X			X	X	X
Computer Hardware Design						X	X		X	X	X	X
Microcomputer Electronics									X			
Database Modeling and Design						X						
Small Business Management	X	X	X			X			X			
Supervision	X	X	X	X	X	X	X	X		X	X	X

Occupational Definitions
Business/Computer Technologies Cluster

The following definitions broadly describe 12 occupations within the Business/Computer Technologies Cluster. While the definitions identify some of the technical skills necessary to gain employment at the technician level, the TCP Matrix offers a list of units to consider for one or more of the following occupations. Note: The shaded units on the TCP Matrix are considered core units within a program, whereas unshaded units may or may not be necessary for employment, depending upon labor market demand in a given region.

Accounting Specialist—An individual who provides technical administrative support to professional accountants and other financial management personnel. Technical skills should include, but not be limited to:

- general accounting principles
- specialized accounting functions
- accounting software operation
- posting transactions
- recordkeeping systems
- documentation skills

Financial Management Assistant—An individual who assists in the financial planning, procurement, and investment of funds for an organization. Technical skills should include, but not be limited to:

- financial report preparation
- basic accounting principles
- financial record analysis
- computer skills
- investment evaluation and recommendation
- financial plan management
- collection and credit policies and procedures

Office Management Specialist—An individual who supervises and manages the operations of business office and management level divisions. Technical skills should include, but not be limited to:

- business communications and coordination
- office systems operations and procedures
- data preparation and evaluation
- office equipment operation and maintenance
- public relations skills
- records management
- computer skills

Paralegal—An individual who performs research, drafting, investigatory, recordkeeping and related administrative functions under the supervision of an attorney. Technical skills should include, but not be limited to:

- research and analysis skills
- legal documents preparation
- investigate case facts and the law to determine cause of action
- prepare affidavits of documents
- maintain document file
- file pleadings with court clerk
- computer skills

Management Information Specialist—An individual who provides and manages data systems and related facilities for processing and retrieving business information. Technical skills should include, but not be limited to:

- business systems networking
- management and control systems
- cost and accounting information systems
- computer operation and maintenance
- data storage and security
- supervision and training
- documentation skills

Computer Programming Specialist—An individual who applies software theory and programming methods to the solution of business data problems. Technical skills should include, but not be limited to:

- computer programming skills
- problem analysis
- input specification
- report generation
- documentation skills
- prototype design and testing
- customized software applications

Information Support Specialist—An individual who researches, plans and evaluates current and future software and office system equipment needs based on user requirements. Technical skills should include, but not limited to:

- system configuations
- personal computer system maintenance
- initial hook-up of hardware
- software installation
- train software system users
- maintain software library
- project management

Microcomputer Applications Specialist—An individual who supports business operations by manipulating data for administrative purposes. Technical skills should include, but not be limited to:
- enter process and retrieve data
- hardware and software applications
- computer list maintenance
- desktop publishing skills
- spreadsheet editing and compilation
- table and graph preparation
- documentation skills

Computer Support Technician—An individual who supports users of hardware and software, including maintenance, special training needs, system upgrades, troubleshooting, and problem solving. Technical skills should include, but not be limited to:
- problem analysis
- project management
- documentation skills
- fundamental programming skills
- hardware and software applications
- hardware design and maintenance
- troubleshooting LANs and PCs

Computer (PC/Network) Coordinator—An individual who implements and manages computer systems from a hardware and applications standpoint. Technical skills should include, but not be limited to:
- PC and network operations
- operating systems knowledge
- hardware and software maintenance
- coordinates PC/network troubleshooting
- documentation skills
- problem analysis
- supervision skills

Network Systems Technician—An individual who ensures computer hardware compatibility and software compatibility. Technical skills should include, but not be limited to:
- hardware and communication system recommendations
- hardware/operating system integration
- set-up operational networks
- train network users
- documentation skills
- troubleshooting LANs, WANs, and PCs
- multi-user network maintenance

Telecommunications Specialist—**An individual who determines requirements for voice, text, and data communications equipment. Technical skills should include, but not be limited to:**

- hardware and software integration
- communication equipment operation
- network linkage implementation
- distance communication system operation
- evaluate system requirements
- minor system repairs
- documentation skills

Essential Competencies

These units appear in each of the individual occupations as well as in the various cluster combinations. Individual unit content may vary slightly due to program emphasis, yet these competencies should be viewed as essential to success in Business/Computer Technologies.

Units:	**Page**
Communications Literacy	EC-2
Mathematics Literacy	EC-13
Science Literacy	EC-19
Technology Literacy	EC-30
Employability Skills	EC-31
Professionalism	EC-36
Teamwork	EC-40
Professional and Ethical Standards	EC-42
Economic and Business Principles	EC-44
Customer Relations	EC-48
Problem Analysis	EC-49
Project Management	EC-50
Technical Documentation	EC-51
Basic Personal Computer Concepts	EC-52

Unit: Communications Literacy

NOTE: This content was extracted from the 9-12 cluster of Ohio's Model Language Arts Program. Due to statewide initiatives other than Tech Prep, this literacy unit was not altered to meet competency-based criteria. Each literacy unit forms a critical link between academic teachers and members of business, industry, and labor. [See "The TCP Process" for more information.]

Subunit: Reading—Structure

Competencies:

RS1 Exhibit knowledge of language structure
RS2 Recognize that there may be more than one interpretation of reading selections
RS3 Recognize various literary devices
RS4 Recognize and discuss literary elements
RS5 Develop and use an increasingly sophisticated vocabulary gained through context
RS6 Apply knowledge of language structure to reading
RS7 Explain why there may be more than one interpretation of reading selections
RS8 Recognize effect of literacy devices on meaning
RS9 Analyze author's use of literary elements
RS10 Recognize relationship of structure to meaning
RS11 Describe various interpretations and meaning levels in reading selections
RS12 Characterize author's use of literary devices
RS13 Characterize use of literary techniques
RS14 Critique a variety of literature with regard to plot, dialogue, theme, setting, and characterization
RS15 Apply an expanding vocabulary gained through reading
RS16 Explain various interpretations and meaning levels in reading selections
RS17 Analyze use of literary techniques (e.g., extended metaphor, simile, personification, hyperbole, pun, alliteration)
RS18 Understand use of literary devices (e.g., irony, satire, allegory, onomatopoeia)
RS19 Analyze and synthesize pieces of literature with regard to plot, dialogue, theme, setting, and characterization

Subunit: Reading—Meaning Construction
Competencies:

RM1	Demonstrate ability to recognize appropriate pre-reading strategies
RM2	Describe effectiveness of a reading selection
RM3	Read to clarify personal thinking and knowledge
RM4	Support interpretation of text by locating and citing specific information
RM5	Develop personal response to a variety of literary works
RM6	Recognize diverse literary interpretations
RM7	Engage in self-selected reading activities
RM8	Confirm and extend meaning in reading by researching new concepts and facts
RM9	Self-monitor and apply corrective strategies when communication has been interrupted or lost
RM10	Use features of literary genres to extend meaning
RM11	Assess effectiveness of a selection read
RM12	Use reading as a possible problem-solving strategy to clarify personal thinking and knowledge
RM13	Use knowledge of semantic elements (e.g., figurative language, denotation, connotation, dialect) to clarify meaning when reading
RM14	Predict, recognize, interpret, and analyze themes based on familiarity with author's work
RM15	Compare and contrast literary genres
RM16	Assess validity and quality of selection read
RM17	Clarify meaning when reading
RM18	Compare personal reaction to critical assessment of a literary selection
RM19	Assess validity of diverse literary interpretations
RM20	Use reference books to find, evaluate, and synthesize information
RM21	Identify tone of a literary work
RM22	Critique validity of diverse literary interpretations
RM23	Integrate personal reaction to and critical assessment of a literary selection

Subunit: Reading—Application
Competencies:

RA1 Select and read material for personal enjoyment and information
RA2 Read a variety of complete, unabridged works
RA3 Employ various reading strategies according to purpose
RA4 Participate in selection of books, materials, and topics for literature study groups
RA5 Develop and apply knowledge of the interrelationship of concepts
RA6 Read selections from a variety of styles and formats, recognizing that style and format influence meaning
RA7 Extend value of reading, writing, speaking, viewing, and listening by pursuing, through reading, new concepts and interests developed as a result of these activities
RA8 Read extensively from a particular author's work and explain elements of author's style

Subunit: Reading—Multidisciplinary
Competencies:

RM1 Connect themes and ideas across disciplines through literature
RM2 Read to facilitate learning across curriculum
RM3 Read to develop awareness of human rights and freedom
RM4 Participate actively in a community of learners
RM5 Recognize and explain interaction between literature and various cultural domains (e.g., social technological, political, economic)
RM6 Explore and analyze a variety of cultural elements, attitudes, beliefs, and value structures by men and women of many racial, ethnic, and cultural groups
RM7 Value thinking and language of others
RM8 Relate literature to historical period about which or in which it was written
RM9 Read to facilitate content learning

Subunit: Writing—Structure
Competencies:

WS1	Develop and expand a repertoire of organizational strategies (e.g., narration, comparison/contrast, and description) through a practice and discussion
WS2	Clarify word choice according to audience, topic, and purpose
WS3	Locate and correct errors in usage, spelling, and mechanics using a variety of resources
WS4	Recognize information gained from primary and secondary sources
WS5	Develop writing which contains ordered, related, well-developed paragraphs with sentences of varied lengths and patterns
WS6	Use information from a variety of sources to develop an integrated piece of writing
WS7	Evaluate and revise writing to focus on such things as audience, tone, and purpose
WS8	Recognize differences between documentation and reference list styles
WS9	Develop extended pieces of writing which contain ordered, related, well-developed paragraphs with sentences of varied lengths and patterns
WS10	Select from a repertoire of organization strategies a pattern appropriate to a topic
WS11	Synthesize information from a variety of sources
WS12	Refine word choice and tone according to audience, situation, and purpose
WS13	Appropriately cite information gained from primary and secondary sources
WS14	Use style manuals or software to prepare documentation and reference lists
WS15	Develop effectively organized pieces of expository writing containing strong voice, clear thesis, and well-developed ideas
WS16	Identify organization patterns appropriate to writing topic
WS17	Respond to others' suggested revisions to a writing piece

Subunit: Writing—Meaning Construction
Competencies:

WM1 Demonstrate knowledge of the recursive nature of the writing process by applying it appropriately to various topics, situations, and audiences
WM2 Develop criteria for writing evaluation using scoring guides and peer/teacher assistance to clarify meaning
WM3 Respond to others' suggested revisions to a piece of writing
WM4 Use word processing, graphics, and publishing aids to construct meaning in writing
WM5 Engage in self-initiated writing activities
WM6 Incorporate personal criteria with generally accepted standards for writing evaluation
WM7 Evaluate, analyze, and synthesize information for writing
WM8 Evaluate own writing using personal and established scoring criteria
WM9 Assess personal/peer revisions to a writing piece
WM10 Recognize and refine personal writing styles

Subunit: Writing—Application
Competencies:

WA1 Apply appropriate writing techniques suitable for varied writing tasks
WA2 Use sentence-combining techniques to improve syntactic fluency and maturity
WA3 Write in response to prompted and self-selected topics in practical, persuasive, descriptive, narrative, and expository domains
WA4 Develop personal voice in writing
WA5 Consider audience and purpose for writing
WA6 Develop criteria for selection and potential development of topic
WA7 Write in a journal or learning log to clarify personal thinking and knowledge
WA8 Apply an expanding vocabulary gained through writing
WA9 Make judicious use of reference sources (e.g., dictionary, thesaurus, on-lien data base, encyclopedia)
WA10 Demonstrate, an appreciation for aesthetically pleasing language through word choice and style
WA11 Apply revising and editing strategies needed for writing task
WA12 Vary sentence lengths and patterns
WA13 Refine personal voice in writing
WA14 Vary styles and formats for intended purpose and audience
WA15 Apply criteria for selection and development of topic
WA16 Participate in peer review of writing in progress
WA17 Use transitions between sentences, ideas, and paragraphs in writing
WA18 Revise and edit papers extensively in preparation for presentation/publication
WA19 Develop a variety of genres
WA20 Focus writing and tone on such elements as audience, situation, and purpose
WA21 Develop topic fully and appropriately
WA22 Use writing process to clarify personal thinking and knowledge
WA23 Apply appropriate recursive writing process as suggested by writing task and writer's process
WA24 Develop an extended piece of writing
WA25 Revise writing and tone to assure focus on such elements as audience, situation, and purpose
WA26 Use writing process to write reflectively

Subunit: Writing—Multidisciplinary
Competencies:

WM1 Use writing process for learning across curriculum
WM2 Use writing process to demonstrate knowledge of need for human rights and freedom
WM3 Value and apply collaborative skills in writing process
WM4 Write in response to reading, speaking, viewing, and listening
WM5 Use multidisciplinary resources in writing projects
WM6 Use writing process to facilitate learning across curriculum
WM7 Recognize value of and engage in collaboration in writing process
WM8 Use communication processes to develop a published writing piece in collaboration with others
WM9 Record experiences and observations related to content learning
WM10 Apply collaborative skills in writing process
WM11 Write collaboratively with peers
WM12 Use cross-disciplinary resources in writing projects

Subunit: Listening/Visual Literacy—Structure
Competencies:

LS1 Listen to and view a wide variety of genres
LS2 Become aware of an author's style through listening and viewing a variety of works
LS3 Recognize correct and appropriate grammar, diction, and syntax
LS4 Expand vocabulary through listening to and viewing varied media
LS5 Recognize beauty of language
LS6 Enhance recognition of an author's style through listening and viewing a variety of works
LS7 Recognize use and misuse of language in media
LS8 Refine knowledge of style through listening and viewing multiple works by the same author
LS9 Expand and refine grammar, diction, and syntax through listening
LS10 Compare authors' styles through viewing and listening to their works
LS11 Expand knowledge of complex grammar, diction, and syntax issues

Subunit: Listening/Visual Literacy—Meaning Construction
Competencies:

LM1	Develop critical thinking skills necessary to evaluate media and assess oral presentations
LM2	Compare new oral texts to past experiences and knowledge in order to enhance comprehension
LM3	Recognize how rhythmic patterns, silence, and cadences enhance quality of speech and literature
LM4	Focus listening and viewing on themes and/or plots
LM5	Gather information from listening and viewing experiences to enhance research
LM6	Use critical thinking skills to evaluate media and oral presentations
LM7	Use prior knowledge and experiences to facilitate comprehension of new oral texts
LM8	Identify rhythmic and time patterns in speech and literature
LM9	Identify and analyze themes and/or plots when listening and viewing
LM10	Use information gathered from listening and viewing experiences to expand research
LM11	Enhance use of critical thinking skills to evaluate media and oral presentations
LM12	Consider prior knowledge and experiences when attempting to understand the meaning of new texts
LM13	Appreciate rhythmic and time patterns of speech and literature
LM14	Select viewing and listening materials to support written text
LM15	Evaluate media and oral presentations analytically and critically
LM16	Organize prior knowledge and experiences to comprehend new texts
LM17	Organize and use viewing and listening materials to support written text

Subunit: Listening/Visual Literacy—Application
Competencies:

LA1	Listen attentively during oral reading
LA2	Use media as stimuli for learning and thinking
LA3	Develop knowledge of structure through art, music, and literature
LA4	Use electronic media to enhance and highlight language learning
LA5	Listen and view for entertainment and enjoyment
LA6	Use technology and other media as means of expressing ideas

Subunit: Listening/Visual Literacy—Multidisciplinary

Competencies:

LM1	Facilitate learning across curriculum through critical listening and viewing
LM2	Engage in individual, small-group, and whole-group listening and viewing activities
LM3	Develop language arts (e.g., viewing, listening) projects collaboratively
LM4	Investigate language and cultural differences through listening and viewing activities
LM5	Participate in a community of learners through productive listening

Subunit: Oral Communication—Structure

Competencies:

OS1	Refine oral communication skills
OS2	Demonstrate knowledge of grammar, usage, and syntax when presenting
OS3	Select topics and vocabulary suitable to audience
OS4	Organize notes and ideas for speaking
OS5	Use language imaginatively
OS6	Modulate voice to meaning when interpreting literature orally
OS7	Organize notes and ideas for formal, semiformal and informal presentations of information
OS8	Refine speaking techniques for formal, semiformal, and informal settings
OS9	Develop repertoire of organizational strategies for presenting information orally
OS10	Expand vocabulary to fit topic
OS11	Select topics suitable to audience, situation, and purpose
OS12	Select appropriate strategies when organizing notes and ideas for speaking

Subunit: Oral Communications—Meaning Construction
Competencies:

OM1	Make connections between prior knowledge and new information for oral presentations
OM2	Participate in informal speaking activities
OM3	Use interviewing techniques to gather information
OM4	Communicate orally to entertain and to inform
OM5	Participate in group communication activities
OM6	Take and organize notes when preparing speech/presentation
OM7	Interpret texts orally to illustrate meaning
OM8	Respond to needs of various audiences
OM9	Gather and assess information for speaking
OM10	Communicate orally to inform and persuade
OM11	Prepare and deliver formal speech/presentation
OM12	Participate in a variety of oral interpretations
OM13	Assess needs of audience and adjust language and presentation according to their knowledge
OM14	Analyze and synthesize information for speaking
OM15	Describe effectiveness of literary selection
OM16	Describe topic or idea in order to clarify personal/audience thinking
OM17	Analyze and synthesize information gathered from a variety of sources for speaking
OM18	Describe validity and/or quality of a literary selection and justify selection
OM19	Interpret orally a variety of literature
OM20	Describe topic or idea to clarify meaning for others

Subunit: Oral Communication—Application
Competencies:

OA1	Become proficient at using interviewing techniques
OA2	Give an oral interpretation for a specific audience
OA3	Develop and apply oral communication skills for cooperative/collaborative learning
OA4	Use oral communication for a variety of purposes and audiences (e.g., negotiations, book reviews, rationales)
OA5	Develop and apply decision-making strategies
OA6	Practice interviewing techniques
OA7	Apply interviewing techniques to purposeful interviews
OA8	Focus oral interpretation on a specific audience

Subunit: Oral Communications—Multidisciplinary
Competencies:

OM1 Value thinking and language of others
OM2 Develop oral projects collaboratively
OM3 Be involved in individual, small-group, and whole-group language activities
OM4 Participate actively in a community of learners
OM5 Investigate language and cultural differences through oral language activities

Unit: Mathematics Literacy

NOTE: This content was extracted from the 9-12 cluster of Ohio's Model Mathematics Program. Due to statewide initiatives other than Tech Prep, this literacy unit was not altered to meet competency-based criteria. Each literacy unit forms a critical link between academic teachers and members of business, industry, and labor. [See "The TCP Process" for more information.]

Subunit: Numbers and Number Relations

Competencies:

NR1 Compare, order, and determine equivalence of real numbers
NR2 Estimate answers, compute, and solve problems involving real numbers
NR3 Compare and contrast real number system, rational number system, and whole number system
NR4 Extend knowledge to complex number system and develop facility with its operation

Subunit: Measurement

Competencies:

M1 Estimate and use measurements
M2 Understand need for measurement and probability that any measurement is accurate to some designated specification
M3 Understand and apply measurements related to power and work
M4 Understand and apply measurement concepts of distance-rate-time problems and acceleration problems
M5 Use real experiments to investigate elasticity, heat, sound, electricity, magnetism, light, acceleration, velocity, energy, and gravity
M6 Use real-world problem situations involving mass and weight
M7 Use real-world problem situations involving simple harmonic motion
M8 Establish ratios with and without common units
M9 Construct and interpret maps, tables, charts, and graphs as they relate to real-world mathematics
M10 Understand and solve rate-change problems
M11 Understand and solve right triangle relationships as they relate to measurement, specifically to Pythagorean theorem
M12 Graph and interpret ordered pairs
M13 Compute total sales from a variety of items
M14 Comprehend and compute rates of growth or decay
M15 Comprehend, compute, and interpret real problems involving annuities

Subunit: Measurement (continued)
Competencies:

M16 Develop an ability to identify real problems and provide possible solutions
M17 Express and apply different types of measurement scales
M18 Identify area and volume

Subunit: Estimation and Mental Computation
Competencies:

E1 Use estimation to eliminate choices in multiple-choice tests
E2 Use estimation to determine reasonableness of problem situations in a wide variety of applications
E3 Estimate shape of graphs of various functions and algebraic expressions
E4 Use mental computation when computer and calculator are inappropriate

Subunit: Data Analysis and Probability
Competencies:

D1 Organize data into tables, charts, and graphs
D2 Understand and apply measures of central tendency, variability, and correlation
D3 Use curve fitting to predict from data
D4 Use experimental or theoretical probability, as appropriate, to represent and solve problems involving uncertainty
D5 Use computer simulations and random number generators to estimate probabilities
D6 Test hypotheses using appropriate statistics
D7 Read, interpret, and use tables, charts, and graphs to identify patterns, note trends, draw conclusions, and make predictions
D8 Identify probabilities of events involving unbiased objects
D9 Use sampling and recognize its role in statistical claims
D10 Design a statistical experiment to study problem, conduct experiment, and interpret and communicate outcomes
D11 Describe normal curve in general terms and use its properties
D12 Create and interpret discrete probability distributions
D13 Understand concept of random variable
D14 Apply concept of random variable to generate and interpret probability distributions, including binomial, uniform, and chi square

Subunit: Algebra
Competencies:

A1 Describe problem situations by using and relating numerical, symbolic, and graphical representations

A2 Use language and notation of functions in symbolic and graphing settings

A3 Recognize and use equivalent zeros of a function, roots and the solution of an equation in terms of graphical and symbolic representations

A4 Describe and use logic of equivalence in working with equations, inequalities, and functions

A5 Develop graphical techniques of solution for problem situations involving functions

A6 Explore and describe characterizing features of functions

A7 Make arguments and proofs in algebraic settings

A8 Factor difference of two squares

A9 Identify slope, midpoint, and distance

A10 Explore and combine rational functions

A11 Explore factoring techniques

A12 Solve quadratic equations by factoring and formula

A13 Set up and solve linear equations

A14 Solve systems of linear equations with two variables

A15 Describe geometric situations and phenomena using variables, equations, and functions

A16 Describe measures of central tendency, mean, median, mode, and variance algebraically and graphically

A17 Represent inequalities on number line and in coordinate plane

A18 Use coordinate arguments in making geometric proofs

A19 Symbolize transformations of figures and graphs

A20 Explore geometric basis for functions of trigonometry

A21 Graph linear functions

A22 Develop and use vectors to represent direction and magnitude including operations

A23 Use polar and parametric equations to describe, graph, and solve problem situations

A24 Represent sequences and series as functions both algebraically and graphically

A25 Explore recursive functions and procedures using spreadsheets, other computer utilities, and appropriate notions

A26 Describe and solve algebraic situations with matrices

A27 Describe and use inverse relationship between functions including exponential and logarithmic

Subunit: Algebra (continued)
Competencies:

A28	Analyze and describe errors and error sources that can be made when using computers and calculators to solve problems
A29	Decide whether problem situation is best solved using computer, calculator, paper and pencil, or mental arithmetic/estimation techniques
A30	Explore relationships between complex numbers and vectors
A31	Make arguments concerning limits, convergence and divergence in context involving sequences, series, and other types of functions
A32	Represent transformations in plane with matrices
A33	Contrast and compare algebra's of rational, real, and complex numbers with characteristics of a matrix algebra system
A34	Construct polynomial approximations of a function over specified intervals of convergence
A35	Examine complex numbers as zeros of functions
A36	Translate verbal statements into symbolic language
A37	Simplify algebraic expressions
A38	Use laws and exponents (including scientific notation)
A39	Expand and extend idea of vectors and linear algebra to higher dimensional situations
A40	Use the idea of independent basis elements for a vector space and associated fundamental concepts of finite dimensional linear algebra
A41	Develop and communicate arguments about limit situations
A42	Use matrices to describe and apply transformations
A43	Develop and use polar and parametric equations to represent problem situations
A44	Explore proofs by mathematical induction

Subunit: Geometry
Competencies:

G1	Create and interpret drawings of three-dimensional objects
G2	Represent problem situations with geometric models and apply properties of figures
G3	Apply Pythagorean theorem
G4	Demonstrate knowledge of angles and parallel and perpendicular lines
G5	Explore inductive and deductive reasoning through applications to various subject areas
G6	Translate between synthetic and coordinate representations
G7	Identify congruent and similar figures using transformation with computer programs
G8	Deduce properties of figures using transformations and coordinates
G9	Use deductive reasoning
G10	Explore compass and straightedge constructions in context of geometric theorems
G11	Demonstrate knowledge of and ability to use proof
G12	Use variety of proof techniques (e.g., synthetic, transformational, and coordinate)
G13	Use variety of proof formats, including T-proof (i.e., two-column) and paragraph proof
G14	Explore different proof strategies
G15	Investigate different proofs of theorems
G16	Develop knowledge of an axiomatic system
G17	Apply transformations and coordinates in problem solving
G18	Represent problem situations with geometric models and apply properties of figures
G19	Deduce properties of figures using vectors
G20	Analyze properties of Euclidean transformations and relate translations to vectors
G21	Apply vectors in problem solving
G22	Develop further knowledge of axiomatic systems by investigating and comparing various geometry's

Subunit: Patterns, Relations, and Functions
Competencies:

P1	Model real-world phenomena with polynomial and exponential functions
P2	Explore relationship between zeros and intercepts of functions
P3	Translate among tables, algebraic expressions, and graphs of functions
P4	Use graphing calculator or computer to generate graph of a function
P5	Explore relationship between a linear function and its inverse
P6	Describe and use characteristics of polynomial functions in problem-solving situations
P7	Explore conic sections and graph using graphing calculator or computer
P8	Apply trigonometric functions to problem situations involving triangles
P9	Discover relationships between algebraic description, kind, and properties of conic
P10	Explore periodic real-world phenomena using sine and cosine functions
P11	Analyze effects of parameter changes on graphs
P12	Use graphing calculator or computer to graph functions
P13	Develop an knowledge of rational and transcendental functions
P14	Understand connections between trigonometric and circular functions
P15	Use circular functions to model periodic real-world functions
P16	Solve trigonometric equations and verify trigonometric identities
P17	Understand connections between trigonometric, exponential, and logarithmic functions and polar coordinates, complex numbers, and series
P18	Model real-world phenomena with a variety of functions
P19	Graph using polar coordinates
P20	Explore graphs in three dimensions
P21	Explore functions of several variables
P22	Explore recursive functions using spreadsheets and/or programming languages

Unit: Science Literacy

NOTE: This content was extracted from the 9-12 cluster of Ohio's Draft Model Science Program. Due to statewide initiatives other than Tech Prep, this literacy unit was not altered to meet competency-based criteria. Each literacy unit forms a critical link between academic teachers and members of business, industry, and labor. [See "The TCP Process" for more information.]

Subunit: Scientific Inquiry

Competencies:

Q1 Check the appropriateness and accuracy of measures and computations using various strategies (e.g., estimations, unit analysis, determination of significant figures)
Q2 Use ratios, proportions, and probabilities in appropriate problem situations
Q3 Translate information from and represent information in various forms with equal ease (e.g., tables, charts, graphs, diagrams, geometric figures)
Q4 Use existing algebraic formulas and create new ones in appropriate problem-solving situations
Q5 Estimate and justify probabilities of outcomes of familiar situations based on experimentation and other strategies
Q6 Invent apparatus and mechanical tools needed to perform unique tasks in various situations
Q7 Identify, compare, and contrast different modes of inquiry, habits of mind, and attitudes and dispositions
Q8 Design investigations that are safe and ethical (i.e., obtain consent and inform others of potential outcomes, risks and benefits, and show evidence of concern for human health and safety, concern for non-human species)
Q9 Make and read scale drawings, maps, models, and other representations to aid planning and understanding
Q10 Seek elaboration and justification of data and ideas, and reflect on alternative interpretations of the information
Q11 Use appropriate units for counts and measures
Q12 Create and use databases (electronic and other) to collect, organize, and verify data and observations
Q13 Design and conduct investigations with multiple variables
Q14 Communicate the results of investigations clearly in a variety of situations

Subunit: Scientific Inquiry (continued)
Competencies:

Q15 Examine relationships in nature, offer alternative explanations for the observations, and collect evidence that can be used to help judge among explanations

Q16 Trace the development (e.g., history, controversy, and ramifications) of various theories, focusing on supporting evidence and modification with new evidence

Q17 Select, invent, and use tools, including analog and digital instruments, to make and record direct measurements

Q18 Observe and document events and characteristics of complex systems

Q19 Explain the influence of perspective (e.g., spatial, temporal, and social) on observation and subsequent interpretations

Q20 Create multiple representations of the same data using a variety of symbols, descriptive languages, mathematical concepts, and graphic techniques

Q21 Generate testable hypotheses for observations of complex systems and interactions

Q22 Document potentially hazardous conditions and associated risks in selected homes and public areas

Q23 Participate in public debates, relying on documented and verified data to construct and represent a position on scientific issues

Q24 Construct and test models of physical, biological, social, and geological systems

Q25 Read, verify, debate, and, where necessary, refute research published in popular or technical journals of science (e.g., *Discover*, *Omni*, *Popular Mechanics*)

Q26 Explore discrepant events and develop and test explanations of what was observed

Q27 Conduct theory-based research using surveys, observational instruments, and other methods

Q28 Modify personal opinions, interpretations, explanations, and conclusions based on new information

Q29 Analyze error and develop explanations in various domains

Q30 Formulate taxonomic schemes based upon multivariate models that help to explain similarities and differences in form, distribution, behavior, survival, and origin of objects and organisms

Q31 Demonstrate various logical connections between related concepts (e.g., entropy, conservation of energy)

Q32 Account for discrepancies between theories and observations

Q33 Analyze the changes within a system when inputs, outputs, and interactions are altered

Subunit: Scientific Inquiry (continued)
Competencies:

Q34 Create, standardize, and document procedures

Q35 Determine the sources of significant disparities between the predicted and recorded results and change research procedures to minimize disparities

Q36 Research, locate, and propose applications for abstract patterns (e.g., fractals, Fibonacci sequences, string theory, orbitals)

Q37 Recognize and utilize classification systems for particles, elements, compounds, phenomena, organisms, and others for exploring and predicting properties and behaviors

Q38 Suggest and defend alternative experimental designs and data explanations (e.g., sampling, controls, safeguards)

Q39 Recognize and communicate differences between questions that can be investigated in a scientific way and those that rely on other ways of knowing

Q40 Draw conclusions based on the relationships among data analysis, experimental design, and possible models and theories

Q41 Suggest new questions as a result of reflection on and discussions about their own scientific investigations

Q42 Investigate, assess, and comment on strengths and weakness of the descriptive and predictive powers of science

Q43 Create new information from representations of data in a variety of forms (e.g., symbols, descriptive languages, graphic formats) utilizing a variety of techniques (e.g., interpolations, extrapolations, linear regressions, central tendencies, correlation's)

Subunit: Scientific Knowledge
Competencies:

K1 Investigate various types of dynamic equilibrium (e.g., biological, geological, mechanical, chemical)

K2 Investigate the relationship between the rates of energy exchange and the relative energy level of components with systems (e.g., tropic levels of ecosystems, osmosis, rate of heating and cooling, storms)

K3 Investigate patterns in the natural world (e.g., heredity, crystalline structures, population and resource distributions, diffraction, dispersion, polarization)

K4 Investigate models and theories that help to explain the interactions of components in systems (e.g., conservation of mass, energy, and momentum; food webs; natural selection; entropy; plate tectonics; chaos; relativity; social-psychology)

K5 Investigate degrees of kinship among organisms and groups of organisms

K6 Investigate the limits of the definition of life, and investigate organisms and physical systems that exist at or near these limits (e.g. viruses, quarks, black holes)

K7 Investigate estimates and measurements of a wide range of distances and rates of change

K8 Investigate the historical development of theories of change over time (e.g., natural selection, continental drift, the big bang, geologic change)

K9 Investigate physical and chemical changes in living and non-living systems (e.g., photosynthesis, weathering processes, glaciation, thermal effects of materials, energy cells)

K10 Investigate simulations of nuclear change (e.g., radioactivity, half life, carbon dating)

K11 Investigate conservation principles associated with physical, chemical, and nuclear changes

K12 Formulate descriptions of the impacts of various forms of mechanical and electromagnetic waves on various organisms on each other over time

K13 Formulate models and hypotheses for patterns in the natural world (e.g., earth structures, transportation systems, migrations, communications, constellations)

K14 Formulate explanations for the influences of objects and organisms on each other over time

K15 Formulate and interpret explanations for change phenomena (e.g., mass extinction's, stellar evolution, punctuated equilibrium, molecular synthesis)

Subunit: Scientific Knowledge (continued)
Competencies:

K16 Formulate and interpret explanations for the magnitudes of diversity at different periods of geologic time (e.g., mutation, global cataclysms, continental drift, competition, mass extinction's)

K17 Formulate interpretations of the structure, function, and diversity in a variety of organisms and physical systems (e.g., DNA and RNA variants, nucleons, interaction particles)

K18 Formulate understandings of geologic time (e.g., millennia, periods, epochs)

K19 Formulate an understanding of the historical development of the model of the universe

K20 Formulate explanations and representations of the production, transmission, and conservation of energy in biological and physical systems (e.g., weather, volcanism, earthquakes, electricity, magnetism, cellular respiration)

K21 Formulate models and hypotheses about patterns in the natural world (e.g., social behavior, molecular structure, energy transformation, entropy, randomness, aging, chaos, hormonal cycles)

K22 Formulate interpretations of the relationship between energy exchange and the interfaces between components within systems

K23a Formulate estimations for the range of energies within and between various phenomena (e.g., thermal, electromagnetic, thermonuclear, chemical, electrical)

K23b Formulate explanations for the historical development of descriptions of motions interactions and transformations of matter and energy (e.g., classical Newtonian mechanics, special and general relativity, chaos)

K24 Formulate models that can be used to describe fundamental molecular interactions in living and non-living systems (e.g., cell membranes, semiconductors).

K25 Formulate an understanding of the degree of relationship among organisms and objects based on molecular structure (e.g., proteins, nucleic acids)

K26 Formulate hypotheses and models that may account for observable events (e.g., electricity and magnetism, gravitation, atoms, bonding, chemical reactions, quantum effects, energy flow on biological systems, predator-prey relationships)

K27 Formulate models and hypotheses about change over time (e.g., natural selection, speciation, punctuated equilibrium, phyleytic gradualism, stellar evolution, plate tectonics, radioactive decay, quantum mechanical theory)

Subunit: Scientific Knowledge (continued)

Competencies:

K28 Formulate lists of limitations and propose refinements of standard classification systems (e.g., periodic table, IUPAC, Linnean, standard model)

K29 Formulate specific cases of limitations and possible exceptions of theories and principles regarding the interactions of moving objects and organisms (e.g., fluid flow in vessels, motion near the speed of light, Heisenberg uncertainty principle, meteorological prediction, local variation and diversity, predicting earthquakes, energy transport in cellular respiration)

K30 Formulate plans and contingencies that can be used to accommodate for changes to and stresses on systems (e.g., wildlife and habitat management, corrosion prevention, noise abatement, structure design)

K31 Formulate models of molecular, atomic, ionic, and subatomic structures and the physical and biological implications of these structures (e.g., genes, nucleons, quarks)

K32 Formulate estimates for a wide range of measurements and scales (e.g., angstroms to light years)

K33 Formulate and interpret representations of time from origin to present accounting for phenomena of scale (e.g., smoothness, punctuation's, chaos)

K34 Formulate interpretations of the historical development of various theories of possible causes of diversity among physical and biological phenomena (e.g., the works of Aristotle, Mendel, Darwin, McClintock)

K35 Formulate models and hypotheses that can be used to explain the interactions of components within technological and ecological systems

Subunit: Conditions for Learning Science

Competencies:

C1 Participate actively in dialogue about and resolution of community issues
C2 Assess information from various countries in the original language or translated form to ascertain the perspectives of many cultures
C3 Analyze the scientific ideas presented in science fiction stories and films
C4 Perform and repeat investigations to verify data, determine regularity, and reduce the impact of experimental error
C5 Present the results of investigations in a variety of forums
C6 Contribute to the decisions regarding topics for investigation
C7 Use various creative means to communicate interpretations of scientific ideas, concepts, phenomena, and events
C8 Consider the scientific thinking and language of others
C9 Individually and collaboratively produce clearly written representations of investigative results
C10 Fulfill responsibilities as part of a research group
C11 Select and utilize resources by various criteria (e.g., efficiency, effectiveness, health, safety) that are appropriate to the investigations being conducted by groups
C12 Present persuasive argument based on the scientific aspects of controversial issues
C13 Collect, store, retrieve, and manipulate information with available t technologies alleges that may range from hand processes up through computer applications
C14 Investigate social issues with a scientific perspective (e.g., human rights, wellness, economics, futurism, environmental ethics)
C15 Keep journals of observations and inferences made over an extended period of time and reflecting upon the impact of these recorded ideas on their thinking and actions
C16 Examine the intellect, perspectives, and ethics of notable scientists
C17 Collect and analyze observations made over extended periods of time and compare these to scientific theories
C18 Create presentations of scientific understandings using diverse modes of expressions
C19 Conduct formal scientific debates in the classroom
C20 Wonder about the likelihood of events that may occur by chance or coincidence
C21 Plan and conduct field trips and experiences for small and large groups
C22 Analyze the historical context which leads to and has lead to scientific t theories

Subunit: Conditions for Learning Science (continued)

Competencies:

C23 Seek information on topics of personal scientific interest from a variety of sources
C24 Conduct learner-developed investigations independently and collaboratively over periods of week and months
C25 Listen attentively and critically to presentations of scientific information made by others
C26 Conduct analyses of propaganda related to scientific issues
C27 Perform investigations that require observations over varying periods of time
C28 Experience scientific concepts as interpreted by other cultures through multimedia and local and global specialists
C29 Access appropriate technology to perform complicated, time-consuming tasks
C30 Relate historical accounts of science to the cultural context in which they were written
C31 Work as a contributing member of a collaborative research group
C32 Examine the influences of social and political structures and realities that contribute to inquiry about scientific issues
C33 Use technology (e.g., desktop publishing, teleconferencing, networking) to communicate scientific ideas
C34 Explore and analyze a variety of perspectives on science (e.g., works by men and women of many racial, ethnic, and cultural groups)
C35 Lead groups of learners of various ages in designing, planning, and conducting science activities
C36 Respect the scientific thinking of others and self
C37 Recognize and contrast different epistemologies
C38 Develop possible courses of action in response to scientific issues of local and global concern
C39 Determine the validity of research conclusions in relation to the design, performance, and results
C40 Develop multimedia presentations of group and individual research projects and investigations appropriate for a variety of audiences and forums
C41 Produce interesting and scientifically correct stories and present them using various modes of expression
C42 Reflect on the ideas and content found in their own journal records
C43 Examine ambiguous results and formulate explanations
C44 Recognize and synthesize the contributions to scientific thought of individuals from many cultures

Subunit: Conditions for Learning Science (continued)
Competencies:

C45 Construct models and simulations of the component structures and functions of living and non-living entities

C46 Lead multi-age groups in the examination of and planned resolution for scientific issues

C47 Recognize and choose members of research teams based upon the merit of their ideas and skills

C48 Construct a portfolio of products, documentation, and self-evaluations of his/her own abilities, skills, and experiences

C49 Synthesize scientific information from a variety of sources

C50 Evaluate and prioritize scientific issues based upon risk-benefit analyses

C51 Refining scientific skills from a variety of experiences

Subunit: Applications for Science Learning
Competencies:

A1 Answer student-determined questions by designing databases and drawing inferences from the analyses of the information in these data bases
A2 Make personal behavior decisions by interpreting information that has a scientific basis
A3 Propose courses of action that will validate and demonstrate personal understandings of scientific principles
A4 Guide other learners in their understanding of the interactions of technologies and society at various periods in time
A5 Promote and carry out practices that contribute to a sustainable environment
A6 Study and propose improvements in public services and systems in their community
A7 Choose consumer materials utilizing personal and environmental risk and benefit information
A8 Make inferences and draw conclusions using databases, spreadsheets, and other technologies
A9 Do simple trouble-shooting on common electrical and mechanical systems, identifying and eliminating possible causes of malfunctions
A10 Construct devices that perform simple, repetitive actions
A11 Investigate the functionality of various geometric shapes in the natural world and the designed world (e.g., translations from spherical to plane representations cause distortions, triangular shapes contribute to rigidity and stability in structures, round shapes minimize boundary for a given capacity)
A12 Make decisions regarding personal and public health
A13 Evaluate the social and ecological risks and benefits resulting from the use of various consumer products
A14 Analyze the contributions of advances in technology through history to his/her everyday life
A15 Identify and reduce risks and threats to a sustainable environment
A16 Extend the limits of human capabilities using technological enhancements
A17 Use and recognize various propaganda techniques
A18 Solve unique problems using the results of systematic analyses
A19 Choose everyday consumer products that utilize recent innovation and pass appropriate performance criteria
A20 Refine personal career interests through investigations of the diversity of manufacturing, research, service, and invention processes

Subunit: Applications for Science Learning (continued)
Competencies:

A21 Predict and investigate the working of toys and tools while controlling and manipulating variables (e.g., friction, gravity, forces)

A22 Write, follow, modify, and extend instructions (e.g., equations, algorithms, formulas, flow diagrams, illustrations)

A23 Create products, make inferences, and draw conclusions using databases, spreadsheets, and other technologies

A24 Predict various scenarios and propose solutions to community issues using scientific information (e.g., actuarial tables, census data, topographic maps, incidence data, climatic data)

A25 Use scientific evidence to consider options and formulate positions about the health and safety of others and him/herself

A26 Search for, use, create, and store objects and information using various strategies and methods of organization and access

A27 Research and write environmental impact statements of his/her own design

A28 Compare school-based science perspectives with those gained through cutting-edge technological applications

A29 Design management plans for natural and human-altered environments (e.g., woodlots, patios, lots, lawns, farmlands, forests)

A30 Refine personal career interests

A31 Promote public awareness of the interaction of technology with social i issues

A32 Advocate and propose courses of action for local and global scientific issues using global networks

A33 Use appropriate technologies to prepare and present the findings of investigations incorporating tables, graphs, diagrams, and text

A34 Make informed consumer choices by evaluating and prioritizing information, evidence, and strategies

A35 Develop an informed point-of-view that allows for validation or refutation of the scientific statements and claims of advocated before pursuing courses of action (e.g., contributing support, signing petitions, casting votes)

A36 Differentiate between observations and inferences in the exploration of evidence related to personal, scientific, and community issues

A37 Develop and write environmental impact and safety and hygiene management plans

A38 Use technology to collect, analyze, and communicate information (e.g., electronic networks, desktop publishing, remote sensing, graphing calculators, satellite telemetry, and others)

A39 Design, construct, and market inventions

Unit: Technology Literacy

NOTE: Over 500 Ohio business, industry, and labor representatives examined, altered, and then verified the content for this unit during the TCP Process. The original content was extracted from the Report of the Task Force on Technology Competence—Learner Goals for All Minnesotans, published by the Minnesota State Council on Vocational Technical Education. The Technology Literacy unit forms a critical link between all teachers and stresses the importance of technological impact on teaching and learning. [See "The TCP Process" for more information.]

Competencies:

T1 Demonstrate a systems view of technology based on the interdependence of social, political, economic, and ecological systems
T2 Assess the career, family, and personal development implications of technological change
T3 Demonstrate continuous learning via technology
T4 Demonstrate global appreciation for technology's potential effects on cultures, geographic areas, and the environment
T5 Apply historical perspective on technology to the development and use of new technologies
T6 Apply diverse technologies to store, access, process, create, and communicate information needed to solve problems
T7 Apply legal principles and ethical conduct to the use of technology
T8 Demonstrate competency in mathematics, science, social sciences, communication, and computer skills through the analysis, design, and evaluation of technological systems
T9 Analyze the potential of alternative technological systems to solve problems and/or to extend human capabilities
T10 Use a variety of tools, materials, and equipment in solving problems and extending human capabilities
T11 Assess risks and benefits of technological developments from an ecological, economic, social, and political perspective
T12 Value human diversity as part of a team in suggesting, designing, and testing solutions to technological problems

Unit: Employability Skills

Competency: Develop a career plan

Competency Builders:

Identify current interests and aptitudes
Identify common barriers to employment
Describe strategies to overcome employment barriers
Locate resources for finding employment
Research job trends
Identify career options
Identify advantages and disadvantages of career options (in addition to other than monetary)
Identify job requirements
Investigate education/training opportunities
Evaluate personal strengths and weaknesses

Competency: Prepare for employment

Competency Builders:

Identify traditional and non-traditional employment sources
Identify present and future employment opportunities (by geographic location)
Research job opportunities, including non-traditional careers
Compare salary ranges and benefit packages
Compile occupational profile
Identify rights and responsibilities of equal employment opportunity laws
Design resume and cover letter
Target resume
Secure references
Investigate generic and specific employment tests (e.g., civil service exam; drug screening)
Use follow-up techniques to enhance employment potential
Demonstrate legible written communication skills using correct grammar, spelling, punctuation, and concise wording
Describe methods for handling illegal questions on job application forms and during interviews
Write letter of application
Research prospective employer and services performed
Explain critical importance of personal appearance, hygiene, and demeanor
Interpret job description
Demonstrate appropriate interview question and answer techniques
Demonstrate methods for handling difficult interview questions
Evaluate job offers
Write letter of acceptance
Write letter of declination
Demonstrate good listening skills
Ask for the job tactfully
Participate in extracurricular activities (e.g., student government, community projects,)

Competency: Evaluate the importance of self-esteem as an employability skill

Competency Builders:

Identify factors that affect self-esteem
Compare effects of low self-esteem and high self-esteem
Identify strategies to promote positive self-esteem

Competency: Demonstrate job retention skills

Competency Builders:

Identify employer expectations regarding job performance, work habits, attitudes, personal appearance, and hygiene
Exhibit appropriate work habits and attitude
Demonstrate ability to set priorities
Identify behaviors to establish successful working relationships
Identify alternatives for dealing with harassment, bias, and discrimination based on race, color, national origin, sex, religion, handicap, or age
Identify opportunities for advancement
List reasons for termination
List consequences of being absent frequently from job
List consequences of frequently arriving late for work
Demonstrate interpersonal relations skills (i.e., verbal and written)
Demonstrate negotiation skills
Demonstrate teamwork
Follow chain-of-command
Exhibit appropriate job dedication

Competency: Demonstrate knowledge of work ethic

Competency Builders:

Define work ethic
Identify factors that influence work ethic
Differentiate law and ethics
Describe how personal values are reflected in work ethic
Describe how interactions in the workplace affect personal work ethic
Describe how life changes affect personal work ethic

Competency: Exhibit appropriate work ethic

Competency Builders:

Use time-management techniques
Avoid personal activity during work hours
Attend work as scheduled
Adhere to company and/or governmental policies, procedures, rules, and regulations
Exercise confidentiality
Demonstrate appropriate human relations skills
Adhere to rules of conduct
Accept constructive criticism
Offer constructive criticism
Take pride in work
Resolve conflict
Manage stress
Avoid sexual connotations and harassment
Adjust to changes in the workplace
Demonstrate punctuality
Assume responsibility for personal decisions and actions
Take responsibility for assignments
Follow chain-of-command

Competency: Apply decision-making techniques

Competency Builders:

Identify decision to be made
Identify ownership of decision to be made
Identify possible alternatives and their consequences
Make decisions based on facts, legality, ethics, goals, and/or culture
Apply time factor(s)
Present decision to be implemented
Evaluate decision made
Take responsibility for decision

Competency: Apply problem-solving techniques

Competency Builders:

Identify problem
Select appropriate problem solving tools/techniques
Identify root problem cause(s)
Track root problem cause(s)
Identify possible solutions and their consequences (e.g., long term, short term, crisis)
Use resources to explore possible solutions to problem
Contrast advantages and disadvantages of each solution
Identify appropriate action
Evaluate results
Identify post-preventive action

Competency: Exhibit characteristics for job advancement

Competency Builders:

Display positive attitude
Demonstrate knowledge of position
Perform quality work
Adapt to changing situations and technology
Demonstrate capability/responsibility for different positions
Identify characteristics of effective leaders
Identify opportunities for leadership in work place/community
Demonstrate initiative to affect change in workplace
Participate in continuing education/training program
Responds appropriately to criticism from employer, supervisor, or other employees
Exhibit awareness of corporate culture
Prepare for job setbacks
Exhibit continual growth based on performance evaluation
Set realistic goals

Unit: Professionalism

Competency: **Project professional image**

Competency Builders:

Define professionalism
Exhibit professional appearance
Exhibit professional manners
Project professional attitude
Identify individuals' vital role in organization
Exhibit proper etiquette in professionally-related situations

Competency: **Achieve individual and professional goals**

Competency Builders:

Set flexible, realistic, and measurable goals
Identify potential barriers to achieving goals
Identify strategies for addressing barriers to goal achievement
Breakdown long-term goals into short-term goals
Prioritize goals
Commit to goals
Adjust goals
Obtain support for goals
Reward goal achievement

Competency: **Manage personal finances**

Competency Builders:

Explain need for personal management records
Balance checkbook
Identify tax obligations
Analyze how credit affects financial security
Compare types and methods of investments
Compare types and methods of borrowing
Compare types and methods of insurance
Compare types of retirement options/plans
Identify discriminatory vs. non-discriminatory expenditures

Competency: Support community well-being

Competency Builders:

Identify environmental, educational, and social issues
Participate in social and/or community activities

Competency: Achieve organizational goals

Competency Builders:

Evaluate personal goals in relation to organizational goals
Monitor progress by evaluating feedback
List responsibilities in relation to organization goals
Accomplish assigned tasks
Exercise responsibility in relation to organizational goals
Set appropriate personal performance standards
Communicate goals with supervisor and peers
Demonstrate knowledge of products and services
Promote organizational image and mission

Competency: Demonstrate positive relations in the workplace

Competency Builders:

Identify personality types of self and other
Identify various management styles
Support employer expectations
Support employer decisions
Accept constructive criticism
Give constructive feedback
Adapt to changes in workplace
List factors to consider before resigning
Write letter of resignation

Competency: Manage stressful situations

Competency Builders:

Accept stress as part of daily life
Identify personal and professional factors contributing to stress
Describe physical and emotional responses to stress
Evaluate positive and negative effects of stress on productivity
Identify strategies for reducing stress
Implement strategies to manage stress
Create strategies for developing and maintaining support systems

Competency: Analyze effects of family on work and work on family

Competency Builders:

Identify how family values, goals, and priorities are reflected in work place
Identify responsibilities and rewards associated with paid and non-paid work
Identify responsibilities and rewards associated with families
Explain how family responsibilities can conflict with work
Explain how work can conflict with family responsibilities
Explain how work-related stress can affect families
Explain how family-related stress can affect work
Identify family support systems and resources
Identify work-related support systems and resources
Communicate with family regarding work

Competency: Apply lifelong learning skills

Competency Builders:

Define lifelong learning
Identify factors that cause need for lifelong learning
Analyze effects of change
Identify reasons why goals change
Describe importance of flexibility and adaptability
Evaluate need for continuing education/training

Competency: **Manage professional development**

Competency Builders:

Identify career opportunities
Modify career plan
Participate in continuing education/training opportunities
Document continuing education/training
Read profession-related manuals, technical journals, and periodicals
Attend meetings, workshops, seminars, conferences, and demonstrations
Participate in professional organizations
Build personal/professional mentor relationship
Build personal/professional support system
Build professional network
Strengthen communication skills
Strengthen leadership skills
Strengthen management skills

Unit: Teamwork

Competency: Demonstrate knowledge of teamwork

Competency Builders:

Define empowerment
Differentiate work groups and teams
Identify conditions essential to teamwork (e.g., brainstorming)
Explain influence of culture (e.g., corporate, community) on teamwork
Identify appropriate situations for using teams
Define team structures (e.g., cross functional, quality improvement, task force, quality circles)
Identify team building concepts
Describe characteristics and dynamics of teams
Identify characteristics of effective team leaders and members
Identify responsibilities of a valuable team member
Identify methods of involving each member of a team
Explain how individuals from various backgrounds contribute to work-related situations (e.g., technical training, cultural heritage)
Explain the purpose of facilitators
Define consensus
Define reward/recognition system

Competency: Demonstrate teamwork

Competency Builders:

Identify purpose of team and intended goal (include time frames)
Structure team around purpose
Define responsibilities of team members
Contribute to efficiency and success of team
Work toward individual and team milestones
Analyze results of team project
Facilitate a team meeting
Assist team member(s) with problem
Monitor time frame
Stress continuous improvement
Accept failure as part of learning

Competency: Use teamwork to solve problems

Competency Builders:

Identify appropriate situations for using teams
Use problem-solving process in a team setting
Identify quality management processes/techniques
Identify quality assurance processes/techniques
Prepare presentation

Competency: Conduct team meetings

Competency Builders:

Plan agenda
Schedule meeting and location
Invite appropriate personnel
Solicit outside speakers as needed
Assign someone to take minutes
Facilitate introductions
Invite questions and comments and group participation
Focus team on agenda items
Assign appropriate action, time frame and accountability to tasks
Monitor time
Close meeting on time
Publish minutes in timely manner
Set ground rules
Avoid placing individual agendas above the group's agenda

Unit: Professional and Ethical Standards

Competency: **Explain professional responsibilities**

Competency Builders:

Explain the need for professional and ethical standards
Explain responsibility of the individual to apply ethical standards
Identify responsibility to client(s) or employer(s)
Explain employer's consequences of unprofessional and/or unethical employee behavior
Identify responsibility to self (e.g., professional appearance and limitations) and to profession
Explain importance of conflict resolution in the workplace

Competency: **Describe self-managed employees**

Competency Builders:

Explain the need for organizing tasks
Explain management-by-objectives
Explain importance of planning, both long-term and short-term
Explain importance of evaluating progress
Explain importance of reporting progress
Explain time management
Explain the benefit of creative brainstorming and innovative thinking

Competency: **Describe intellectual property**

Competency Builders:

Explain legal ownership of proprietary assets produced by the computing professional
Explain public policy
Explain rights of the originator
Explain rights of the public
Explain patent
Explain copyright
Explain licenses
Explain confidentiality

Competency: Apply professional and ethical standards

Competency Builders:

Identify computing industry's standards
Describe computing industry's code of ethics
Explain various ethics established by computing societies
Apply various ethics established by computing societies

Unit: Economic and Business Principles

Competency: Describe basic economic concepts

Competency Builders:

Identify importance of economic resources
Explain concept of economic resources
Explain importance of economic resources
Explain concept of economic goods and services
Differentiate between economic goods and services
Differentiate between needs and wants
Explain concept of supply and demand
Explain concept of price
Explain how supply, demand, and price are related
Explain concept of private enterprise and business ownership
Explain concept of profit
Explain concept of risk
Explain concept of competition
Explain relationship among risk, competition, and profit

Competency: Conduct training

Competency Builders:

Secure training resources, materials, and equipment
Assess training needs
Train employees
Evaluate progress
Provide appropriate feedback

Competency: Evaluate economic systems

Competency Builders:

Compare types of economic systems
Research free enterprise system
Interpret relationship between government and business
Interpret relationship between labor and management

Competency: Illustrate basic economic principles

Competency Builders:

Illustrate global economic and world market applications
Illustrate economic cycles (e.g., unemployment, recession, inflation, budget deficits)
Illustrate economic activity's affect on business (e.g., financial, competitor indicators, industry)

Competency: Analyze cost and profit influences

Competency Builders:

Identify importance of maximizing quality
Identify importance of maximizing productivity
Contrast specialized training and cross training
Contrast labor and management
Contrast government and business

Competency: Illustrate economic indicators and trends

Competency Builders:

Define gross national product and gross domestic product
Interpret impact of interest rates
Interpret impact of government spending
Interpret impact of seasonal business cycles
Interpret impact of inflation, growth, recession, and unemployment
Interpret impact of national and world events
Interpret impact of the growth of international trade

Competency: Explain basic international trade concepts

Competency Builders:

Explain nature and importance of international trade
Contrast advantages and disadvantages of marketing in international trade
Explain balance of trade concepts
Describe impact of foreign investment

Competency: Explain basic business concepts

Competency Builders:

Identify functions of business
Explain role of management
Explain role of labor
Explain concept of service as a product
Explain role of administration
Explain role of operations
Identify role of company objectives
Identify importance of ethical business practices
Identify types of ownership
Identify components of a business plan

Competency: Summarize business principles

Competency Builders:

Explain business organizations and functions
Describe business reporting and information flow
Map interface of departmental functions
Identify communication channels (e.g., formal, informal)
Explain total quality management (TQM) principles

Competency: Illustrate legal concepts

Competency Builders:

Define legal terminology
Explain business law concepts
Interpret contracts and/or legal documents
Explain relationship of laws and regulations to company contracts, policies, and procedures
Explain laws relating to working conditions, wages and hours, civil rights, social security, disability, and unemployment insurance

Competency: Explain role of marketing

Competency Builders:

Explain aspects of sound business image
Identify purposes of marketing
Identify functions of marketing
Describe effects of marketing
Explain product/service variety
Identify target markets
Define sales potential
Explain pricing strategies
Differentiate advertising campaigns
Explain advantages and disadvantages of advertising agencies
Describe sales incentive programs
Maintain marketing feedback and make appropriate changes
Identify types of marketing strategies and the advantage and disadvantage of each
    (e.g. phone, mail, person)
Design monitor plan

Competency: Serve customers/clients

Competency Builders:

Identify importance of customer
Identify customer services to provide
Relate to customers in timely fashion
Identify customer needs and wants
Gather complete and accurate information
Apply customer service concepts and terminology
Identify methods for addressing dissatisfied customers

Unit: Customer Relations

Competency: Demonstrate positive relations with customers

Competency Builders:

Identify importance of customers to business
Differentiate between customer needs and wants
Provide prompt and courteous service
Resolve customer inquiries and complaints and/or refer customer to appropriate person
Identify methods of addressing dissatisfied customers

Competency: Perform scheduling functions to meet customers needs

Competency Builders:

Create calendar/schedule
Maintain appointment calendars
Process requests for appointments
Verify appointments
Notify customer of changes in schedule
Manage scheduling conflicts

Unit: Problem Analysis

Competency: Appraise situations

Competency Builders:

Identify concerns
Classify concerns
Set priorities
Identify resolution process
Plan resolution

Competency: Analyze potential problems

Competency Builders:

Identify potential problems
Identify likely causes
Identify preventive actions
Identify contingent actions

Competency: Analyze actual problems

Competency Builders:

Identify deviation
Identify problem and possible causes
Test for probable causes
Verify cause

Competency: Analyze decisions

Competency Builders:

Identify objective(s)
Classify objective(s)
Identify alternatives
Evaluate alternatives
Assess risks
Make final choice

Unit: Project Management

Competency: Explain project management

Competency Builders:

Identify project purpose/goal
Identify project objectives
Identify work breakdown structure (WBS)
Identify resource requirements

Competency: Plan projects

Competency Builders:

Apply responsibility assignment matrix (RAM)
Apply Gantt or bar charts
Apply network diagrams
Apply critical path method (CPM)
Apply project education and review techniques
Apply software programs

Competency: Implement projects

Competency Builders:

Monitor project
Control project
Modify project

Competency: Evaluate projects

Competency Builders:

Analyze performance
Close-out project evaluation
Draw project management conclusions

Unit: Technical Documentation

Competency: Demonstrate proficiency in technical documentation

Competency Builders:

Identify parameters
Ask questions
Interpret specifications or drawings
Record process (e.g., flowchart, step-by-step)
Record data
Maintain test logs
Compile cumulative reference/record

Competency: Demonstrate proficiency in technical report writing

Competency Builders:

Use data books and cross reference/technical manuals
Identify type of report needed
Compile relevant data
Design applicable charts and graphs
Analyze data
Draw conclusions
Outline reports
Write reports
Present reports

Unit: Basic Personal Computer Concepts

Competency: Explain use of personal computers in business

Competency Builders:

Describe the impact of computer use on individuals and businesses
Identify basic applications of computers in business
Identify automated business systems and electronic media
Identify different types and sizes of computers
Define input, processor, output, and storage units
Identify how PCs integrate with other information technologies (e.g., scanners, mainframes)
Describe impact of computer use on individuals and business
Identify basic applications of computers in business

Competency: Describe personal computer operations

Competency Builders:

Explain how data is stored in main computer memory
Explain how a computer system executes program instruction
Explain electronic storage capacity
Explain electronic units of measure and how they represent data
Identify data storage techniques
Identify types of memory
Explain different types of input and output

Competency: Explain information processing

Competency Builders:

Define operating systems
Describe the difference between data files and program files
Demonstrate knowledge of system commands
Define software types and functions
Describe basic disk operation and care
List business applications of software package
List advantages and disadvantages of integrated and dedicated software

Competency: Demonstrate computer literacy

Competency Builders:

Identify computer components
Identify parallel versus serial ports
Explain differences between conventional, expanded, and extended memory
Identify use of storage media
List commands that affect disk operation
Use disk operating system to format disks
Originate directories and subdirectories
Explain common configuration variables
Explain device driver concepts
Demonstrate commands that open, close, copy, delete, and rename files on disk
Keyboard document(s) using computer

Accounting Specialist

NOTE: Each TCP should respond to labor market demands in your area. Therefore, the following pages should be examined before being selected for use in TCP Part I (See "The TCP Process" Tab). For example, some units may not apply to your situation, nor might all the competencies within each unit be appropriate. Also, note that several units appear within each of the twelve occupations in this binder. Those "common" units should only appear once in the draft competency list for TCP Part I if you are compiling several occupations in a cluster format (See "TCP Matrix" Tab).

Units to Consider:	Page
Employability Skills	AS-3
Professionalism	AS-8
Teamwork	AS-12
Professional and Ethical Standards	AS-14
Economic and Business Principles	AS-16
Customer Relations	AS-20
Problem Analysis	AS-21
Project Management	AS-22
Technical Documentation	AS-23
Basic Personal Computer Concepts	AS-24
Packaged PC Applications	AS-26
General Office Functions	AS-31
Office Technology	AS-37
General Accounting Functions	AS-40
Specialized Accounting Functions	AS-45
Business Law	AS-51
Computer Operations	AS-54
Network Operations	AS-58
Small Business Management	AS-63
Supervision	AS-69

DON'T FORGET TO INSERT YOUR ACADEMIC COMPETENCIES HERE

Communications Literacy, Mathematics Literacy, Science Literacy, and Technology Literacy have been removed so that you may insert your own academic lists here.

COMMUNICATIONS LITERACY

(e.g., Reading, Writing, Speaking, and Listening)

MATHEMATICS LITERACY

(e.g., Algebra, Geometry, Trigonometry, Calculus)

SCIENCE LITERACY

(e.g., Physical Science, Environmental Science, Agriscience, Biology, Chemistry, Physics, Anatomy & Physiology)

TECHNOLOGY LITERACY

(i.e., the impact of technology on humans and their home, work, and play environments)

Unit: Employability Skills

Competency: Develop a career plan

Competency Builders:

Identify current interests and aptitudes
Identify common barriers to employment
Describe strategies to overcome employment barriers
Locate resources for finding employment
Research job trends
Identify career options
Identify advantages and disadvantages of career options (in addition to other than monetary)
Identify job requirements
Investigate education/training opportunities
Evaluate personal strengths and weaknesses

Competency: Prepare for employment

Competency Builders:

Identify traditional and non-traditional employment sources
Identify present and future employment opportunities (by geographic location)
Research job opportunities, including non-traditional careers
Compare salary ranges and benefit packages
Compile occupational profile
Identify rights and responsibilities of equal employment opportunity laws
Design resume and cover letter
Target resume
Secure references
Investigate generic and specific employment tests (e.g., civil service exam; drug screening)
Use follow-up techniques to enhance employment potential
Demonstrate legible written communication skills using correct grammar, spelling, punctuation, and concise wording
Describe methods for handling illegal questions on job application forms and during interviews
Write letter of application
Research prospective employer and services performed
Explain critical importance of personal appearance, hygiene, and demeanor
Interpret job description
Demonstrate appropriate interview question and answer techniques
Demonstrate methods for handling difficult interview questions
Evaluate job offers
Write letter of acceptance
Write letter of declination
Demonstrate good listening skills
Ask for the job tactfully
Participate in extracurricular activities (e.g., student government, community projects,)

Competency: Evaluate the importance of self-esteem as an employability skill

Competency Builders:

Identify factors that affect self-esteem
Compare effects of low self-esteem and high self-esteem
Identify strategies to promote positive self-esteem

Competency: Demonstrate job retention skills

Competency Builders:

Identify employer expectations regarding job performance, work habits, attitudes, personal appearance, and hygiene
Exhibit appropriate work habits and attitude
Demonstrate ability to set priorities
Identify behaviors to establish successful working relationships
Identify alternatives for dealing with harassment, bias, and discrimination based on race, color, national origin, sex, religion, handicap, or age
Identify opportunities for advancement
List reasons for termination
List consequences of being absent frequently from job
List consequences of frequently arriving late for work
Demonstrate interpersonal relations skills (i.e., verbal and written)
Demonstrate negotiation skills
Demonstrate teamwork
Follow chain-of-command
Exhibit appropriate job dedication

Competency: Demonstrate knowledge of work ethic

Competency Builders:

Define work ethic
Identify factors that influence work ethic
Differentiate law and ethics
Describe how personal values are reflected in work ethic
Describe how interactions in the workplace affect personal work ethic
Describe how life changes affect personal work ethic

Competency: **Exhibit appropriate work ethic**

Competency Builders:

Use time-management techniques
Avoid personal activity during work hours
Attend work as scheduled
Adhere to company and/or governmental policies, procedures, rules, and regulations
Exercise confidentiality
Demonstrate appropriate human relations skills
Adhere to rules of conduct
Accept constructive criticism
Offer constructive criticism
Take pride in work
Resolve conflict
Manage stress
Avoid sexual connotations and harassment
Adjust to changes in the workplace
Demonstrate punctuality
Assume responsibility for personal decisions and actions
Take responsibility for assignments
Follow chain-of-command

Competency: **Apply decision-making techniques**

Competency Builders:

Identify decision to be made
Identify ownership of decision to be made
Identify possible alternatives and their consequences
Make decisions based on facts, legality, ethics, goals, and/or culture
Apply time factor(s)
Present decision to be implemented
Evaluate decision made
Take responsibility for decision

Competency: Apply problem-solving techniques

Competency Builders:

Identify problem
Select appropriate problem solving tools/techniques
Identify root problem cause(s)
Track root problem cause(s)
Identify possible solutions and their consequences (e.g., long term, short term, crisis)
Use resources to explore possible solutions to problem
Contrast advantages and disadvantages of each solution
Identify appropriate action
Evaluate results
Identify post-preventive action

Competency: Exhibit characteristics for job advancement

Competency Builders:

Display positive attitude
Demonstrate knowledge of position
Perform quality work
Adapt to changing situations and technology
Demonstrate capability/responsibility for different positions
Identify characteristics of effective leaders
Identify opportunities for leadership in work place/community
Demonstrate initiative to affect change in workplace
Participate in continuing education/training program
Responds appropriately to criticism from employer, supervisor, or other employees
Exhibit awareness of corporate culture
Prepare for job setbacks
Exhibit continual growth based on performance evaluation
Set realistic goals

Unit: Professionalism

Competency: **Project professional image**

Competency Builders:

Define professionalism
Exhibit professional appearance
Exhibit professional manners
Project professional attitude
Identify individuals' vital role in organization
Exhibit proper etiquette in professionally-related situations

Competency: **Achieve individual and professional goals**

Competency Builders:

Set flexible, realistic, and measurable goals
Identify potential barriers to achieving goals
Identify strategies for addressing barriers to goal achievement
Breakdown long-term goals into short-term goals
Prioritize goals
Commit to goals
Adjust goals
Obtain support for goals
Reward goal achievement

Competency: **Manage personal finances**

Competency Builders:

Explain need for personal management records
Balance checkbook
Identify tax obligations
Analyze how credit affects financial security
Compare types and methods of investments
Compare types and methods of borrowing
Compare types and methods of insurance
Compare types of retirement options/plans
Identify discriminatory vs. non-discriminatory expenditures

Competency: Support community well-being

Competency Builders:

Identify environmental, educational, and social issues
Participate in social and/or community activities

Competency: Achieve organizational goals

Competency Builders:

Evaluate personal goals in relation to organizational goals
Monitor progress by evaluating feedback
List responsibilities in relation to organization goals
Accomplish assigned tasks
Exercise responsibility in relation to organizational goals
Set appropriate personal performance standards
Communicate goals with supervisor and peers
Demonstrate knowledge of products and services
Promote organizational image and mission

Competency: Demonstrate positive relations in the workplace

Competency Builders:

Identify personality types of self and other
Identify various management styles
Support employer expectations
Support employer decisions
Accept constructive criticism
Give constructive feedback
Adapt to changes in workplace
List factors to consider before resigning
Write letter of resignation

Competency: Manage stressful situations

Competency Builders:

Accept stress as part of daily life
Identify personal and professional factors contributing to stress
Describe physical and emotional responses to stress
Evaluate positive and negative effects of stress on productivity
Identify strategies for reducing stress
Implement strategies to manage stress
Create strategies for developing and maintaining support systems

Competency: Analyze effects of family on work and work on family

Competency Builders:

Identify how family values, goals, and priorities are reflected in work place
Identify responsibilities and rewards associated with paid and non-paid work
Identify responsibilities and rewards associated with families
Explain how family responsibilities can conflict with work
Explain how work can conflict with family responsibilities
Explain how work-related stress can affect families
Explain how family-related stress can affect work
Identify family support systems and resources
Identify work-related support systems and resources
Communicate with family regarding work

Competency: Apply lifelong learning skills

Competency Builders:

Define lifelong learning
Identify factors that cause need for lifelong learning
Analyze effects of change
Identify reasons why goals change
Describe importance of flexibility and adaptability
Evaluate need for continuing education/training

Competency: **Manage professional development**

Competency Builders:

Identify career opportunities
Modify career plan
Participate in continuing education/training opportunities
Document continuing education/training
Read profession-related manuals, technical journals, and periodicals
Attend meetings, workshops, seminars, conferences, and demonstrations
Participate in professional organizations
Build personal/professional mentor relationship
Build personal/professional support system
Build professional network
Strengthen communication skills
Strengthen leadership skills
Strengthen management skills

Unit: Teamwork

Competency: Demonstrate knowledge of teamwork

Competency Builders:

Define empowerment
Differentiate work groups and teams
Identify conditions essential to teamwork (e.g., brainstorming)
Explain influence of culture (e.g., corporate, community) on teamwork
Identify appropriate situations for using teams
Define team structures (e.g., cross functional, quality improvement, task force, quality circles)
Identify team building concepts
Describe characteristics and dynamics of teams
Identify characteristics of effective team leaders and members
Identify responsibilities of a valuable team member
Identify methods of involving each member of a team
Explain how individuals from various backgrounds contribute to work-related situations (e.g., technical training, cultural heritage)
Explain the purpose of facilitators
Define consensus
Define reward/recognition system

Competency: Demonstrate teamwork

Competency Builders:

Identify purpose of team and intended goal (include time frames)
Structure team around purpose
Define responsibilities of team members
Contribute to efficiency and success of team
Work toward individual and team milestones
Analyze results of team project
Facilitate a team meeting
Assist team member(s) with problem
Monitor time frame
Stress continuous improvement
Accept failure as part of learning

Competency: Use teamwork to solve problems

Competency Builders:

Identify appropriate situations for using teams
Use problem-solving process in a team setting
Identify quality management processes/techniques
Identify quality assurance processes/techniques
Prepare presentation

Competency: Conduct team meetings

Competency Builders:

Plan agenda
Schedule meeting and location
Invite appropriate personnel
Solicit outside speakers as needed
Assign someone to take minutes
Facilitate introductions
Invite questions and comments and group participation
Focus team on agenda items
Assign appropriate action, time frame and accountability to tasks
Monitor time
Close meeting on time
Publish minutes in timely manner
Set ground rules
Avoid placing individual agendas above the group's agenda

Unit: Professional and Ethical Standards

Competency: Explain professional responsibilities

Competency Builders:

Explain the need for professional and ethical standards
Explain responsibility of the individual to apply ethical standards
Identify responsibility to client(s) or employer(s)
Explain employer's consequences of unprofessional and/or unethical employee behavior
Identify responsibility to self (e.g., professional appearance and limitations) and to profession
Explain importance of conflict resolution in the workplace

Competency: Describe self-managed employees

Competency Builders:

Explain the need for organizing tasks
Explain management-by-objectives
Explain importance of planning, both long-term and short-term
Explain importance of evaluating progress
Explain importance of reporting progress
Explain time management
Explain the benefit of creative brainstorming and innovative thinking

Competency: Describe intellectual property

Competency Builders:

Explain legal ownership of proprietary assets produced by the computing professional
Explain public policy
Explain rights of the originator
Explain rights of the public
Explain patent
Explain copyright
Explain licenses
Explain confidentiality

Competency: Apply professional and ethical standards

Competency Builders:

Identify computing industry's standards
Describe computing industry's code of ethics
Explain various ethics established by computing societies
Apply various ethics established by computing societies

Unit: Economic and Business Principles

Competency: Describe basic economic concepts

Competency Builders:

Identify importance of economic resources
Explain concept of economic resources
Explain importance of economic resources
Explain concept of economic goods and services
Differentiate between economic goods and services
Differentiate between needs and wants
Explain concept of supply and demand
Explain concept of price
Explain how supply, demand, and price are related
Explain concept of private enterprise and business ownership
Explain concept of profit
Explain concept of risk
Explain concept of competition
Explain relationship among risk, competition, and profit

Competency: Conduct training

Competency Builders:

Secure training resources, materials, and equipment
Assess training needs
Train employees
Evaluate progress
Provide appropriate feedback

Competency: Evaluate economic systems

Competency Builders:

Compare types of economic systems
Research free enterprise system
Interpret relationship between government and business
Interpret relationship between labor and management

Competency: Illustrate basic economic principles

Competency Builders:

Illustrate global economic and world market applications
Illustrate economic cycles (e.g., unemployment, recession, inflation, budget deficits)
Illustrate economic activity's affect on business (e.g., financial, competitor indicators, industry)

Competency: Analyze cost and profit influences

Competency Builders:

Identify importance of maximizing quality
Identify importance of maximizing productivity
Contrast specialized training and cross training
Contrast labor and management
Contrast government and business

Competency: Illustrate economic indicators and trends

Competency Builders:

Define gross national product and gross domestic product
Interpret impact of interest rates
Interpret impact of government spending
Interpret impact of seasonal business cycles
Interpret impact of inflation, growth, recession, and unemployment
Interpret impact of national and world events
Interpret impact of the growth of international trade

Competency: Explain basic international trade concepts

Competency Builders:

Explain nature and importance of international trade
Contrast advantages and disadvantages of marketing in international trade
Explain balance of trade concepts
Describe impact of foreign investment

Competency: Explain basic business concepts

Competency Builders:

Identify functions of business
Explain role of management
Explain role of labor
Explain concept of service as a product
Explain role of administration
Explain role of operations
Identify role of company objectives
Identify importance of ethical business practices
Identify types of ownership
Identify components of a business plan

Competency: Summarize business principles

Competency Builders:

Explain business organizations and functions
Describe business reporting and information flow
Map interface of departmental functions
Identify communication channels (e.g., formal, informal)
Explain total quality management (TQM) principles

Competency: Illustrate legal concepts

Competency Builders:

Define legal terminology
Explain business law concepts
Interpret contracts and/or legal documents
Explain relationship of laws and regulations to company contracts, policies, and procedures
Explain laws relating to working conditions, wages and hours, civil rights, social security, disability, and unemployment insurance

Competency: Explain role of marketing

Competency Builders:

Explain aspects of sound business image
Identify purposes of marketing
Identify functions of marketing
Describe effects of marketing
Explain product/service variety
Identify target markets
Define sales potential
Explain pricing strategies
Differentiate advertising campaigns
Explain advantages and disadvantages of advertising agencies
Describe sales incentive programs
Maintain marketing feedback and make appropriate changes
Identify types of marketing strategies and the advantage and disadvantage of each
    (e.g. phone, mail, person)
Design monitor plan

Competency: Serve customers/clients

Competency Builders:

Identify importance of customer
Identify customer services to provide
Relate to customers in timely fashion
Identify customer needs and wants
Gather complete and accurate information
Apply customer service concepts and terminology
Identify methods for addressing dissatisfied customers

Unit: Customer Relations

Competency: **Demonstrate positive relations with customers**

Competency Builders:

Identify importance of customers to business
Differentiate between customer needs and wants
Provide prompt and courteous service
Resolve customer inquiries and complaints and/or refer customer to appropriate person
Identify methods of addressing dissatisfied customers

Competency: **Perform scheduling functions to meet customers needs**

Competency Builders:

Create calendar/schedule
Maintain appointment calendars
Process requests for appointments
Verify appointments
Notify customer of changes in schedule
Manage scheduling conflicts

Unit: Problem Analysis

Competency: Appraise situations

Competency Builders:

Identify concerns
Classify concerns
Set priorities
Identify resolution process
Plan resolution

Competency: Analyze potential problems

Competency Builders:

Identify potential problems
Identify likely causes
Identify preventive actions
Identify contingent actions

Competency: Analyze actual problems

Competency Builders:

Identify deviation
Identify problem and possible causes
Test for probable causes
Verify cause

Competency: Analyze decisions

Competency Builders:

Identify objective(s)
Classify objective(s)
Identify alternatives
Evaluate alternatives
Assess risks
Make final choice

Unit: Project Management

Competency: Explain project management

Competency Builders:

Identify project purpose/goal
Identify project objectives
Identify work breakdown structure (WBS)
Identify resource requirements

Competency: Plan projects

Competency Builders:

Apply responsibility assignment matrix (RAM)
Apply Gantt or bar charts
Apply network diagrams
Apply critical path method (CPM)
Apply project education and review techniques
Apply software programs

Competency: Implement projects

Competency Builders:

Monitor project
Control project
Modify project

Competency: Evaluate projects

Competency Builders:

Analyze performance
Close-out project evaluation
Draw project management conclusions

Unit: Technical Documentation

Competency: **Demonstrate proficiency in technical documentation**

Competency Builders:

Identify parameters
Ask questions
Interpret specifications or drawings
Record process (e.g., flowchart, step-by-step)
Record data
Maintain test logs
Compile cumulative reference/record

Competency: **Demonstrate proficiency in technical report writing**

Competency Builders:

Use data books and cross reference/technical manuals
Identify type of report needed
Compile relevant data
Design applicable charts and graphs
Analyze data
Draw conclusions
Outline reports
Write reports
Present reports

Unit: Basic Personal Computer Concepts

Competency: Explain use of personal computers in business

Competency Builders:

Describe the impact of computer use on individuals and businesses
Identify basic applications of computers in business
Identify automated business systems and electronic media
Identify different types and sizes of computers
Define input, processor, output, and storage units
Identify how PCs integrate with other information technologies (e.g., scanners, mainframes)
Describe impact of computer use on individuals and business
Identify basic applications of computers in business

Competency: Describe personal computer operations

Competency Builders:

Explain how data is stored in main computer memory
Explain how a computer system executes program instruction
Explain electronic storage capacity
Explain electronic units of measure and how they represent data
Identify data storage techniques
Identify types of memory
Explain different types of input and output

Competency: Explain information processing

Competency Builders:

Define operating systems
Describe the difference between data files and program files
Demonstrate knowledge of system commands
Define software types and functions
Describe basic disk operation and care
List business applications of software package
List advantages and disadvantages of integrated and dedicated software

Competency: Demonstrate computer literacy

Competency Builders:

Identify computer components
Identify parallel versus serial ports
Explain differences between conventional, expanded, and extended memory
Identify use of storage media
List commands that affect disk operation
Use disk operating system to format disks
Originate directories and subdirectories
Explain common configuration variables
Explain device driver concepts
Demonstrate commands that open, close, copy, delete, and rename files on disk
Keyboard document(s) using computer

Unit: Packaged PC Applications

Competency: Explain software applications

Competency Builders:

Describe need for application software
Describe different types of software applications
Explain advantages and disadvantages of various software applications
List software sources
Explain copyright laws for software

Competency: Explain spreadsheet packages

Competency Builders:

Define spreadsheet
Demonstrate knowledge of basic spreadsheet terminology
Define components of spreadsheets
Describe implementation of spreadsheet operations in business scope

Competency: Perform word processing functions

Competency Builders:

Define word processing terminology
Explain functions of word processing software
Explain word processing applications
Use appropriate reference materials
Keyboard efficiently by touch
Use mouse
Initialize diskette
Prepare backup file
Maintain backup file
Update spelling dictionary and spell check
Perform document functions (e.g., locate, rename, delete, save, retrieve, copy)
Perform formatting functions (e.g., set margins and tabs, center, underline, bold, cut and paste)
Use edit features
Use sort features
Add page numbers to document
Add headers and footers
Print files, pages, screens and blocks of text
Verify accuracy of output
Create a document
Save a document to disk
Retrieve a document from disk
Edit an existing document
Describe word-wrap
Print a document
Create glossary file
Store boilerplate material
Compose documents at keyboard
Tabulate multiple columns
Prepare new documents from existing ones
Merge selected copy with new information
Prepare various types of table options
Index text
Format text
Integrate database, spreadsheet and graphic files
Convert documents from one system to another
Demonstrate use of computer thesaurus
Use multimedia techniques/resources

Competency: Use spreadsheet packages

Competency Builders:

Use spell check
Execute an electronic spreadsheet
Enter data, formulas, and functions
Differentiate between labels and numbers
Compare absolute and relative addressing
Speculate using "what if..." questions
Sequence keystrokes in the creation of a macro
Create database within spreadsheet and perform data query functions
Move around in spreadsheet and correct errors
Format spreadsheet
Create graphs
Print graphs
Save previously saved files
Load previously saved files
Replicate cells using copy commands
Use electronic spreadsheet to complete business application
Use spreadsheet to plan financial strategies
Prepare spreadsheet
Use multimedia techniques/resources

Competency: Explain database packages

Competency Builders:

Define database
Explain terms used in database systems
Describe common functions of database systems

Competency: Use database packages

Competency Builders:

Use database package to create, input, edit, and display fields and records
Analyze structure of database files
Perform calculations with a database file
Alter structure of database file
Sort records based on multiple fields
Identify advanced database technology
Use appropriate reference materials
Create relational database
Enter elements into database
Proofread database
Edit database
Design report formats
Apply database management system (DBMS) commands
Print reports using data from multiple databases
Use database files with other application software
Verify accuracy of output (e.g., edit reports)
Use multimedia techniques/resources

Competency: Explain function of shared environments

Competency Builders:

List purposes of a network environment
Define electronic mail
Identify advantages and disadvantages of electronic mail
Describe impact of local and wide area networks on mail delivery

Competency: Use a shared environment

Competency Builders:

Compose electronic messages
Send electronic messages using appropriate format
List categories of electronic mail service
Transmit document using electronic mail system
Monitor electronic mail

Competency: Manage software packages

Competency Builders:

Install software packages
Upgrade software packages
Document installation of software packages
Convert data files

Competency: Perform computer business graphics

Competency Builders:

Define purpose and types of graphics
Use appropriate reference materials
Create graphics
Proofread graphics
Edit graphics
Save graphics
Retrieve graphics
Print graphics to various output devices
Verify accuracy of output
Use graphic functions to create files, input data, process data, and produce output
Use graphics files with other application software

Competency: Use graphic user interface (GUI) techniques

Competency Builders:

Explain multi tasking environment
Setup data exchange between two different applications
Setup an object link between two different applications
Explain the use of dynamic link libraries

Unit: General Office Functions

Competency: Maintain a safe working environment

Competency Builders:

Comply with company safety and health rules and regulations
Use appropriate reference materials
Use equipment correctly
Use appropriate actions during emergencies
Maintain a clean and orderly work area

Competency: Maintain work flow

Competency Builders:

Organize work
Prioritize work
Apply time-management techniques
Complete assigned tasks in a timely manner
Coordinate with team members as needed

Competency: Demonstrate positive relations with customers/clients

Competency Builders:

Identify importance of repeat customers to business
Identify customer needs and wants
Provide prompt and courteous service
Resolve customer inquiries and complaints and/or refer customer to appropriate person

Competency: Perform telephone operations

Competency Builders:

Use appropriate reference materials
Display telephone etiquette
Operate equipment
Route calls
Listen assertively
Verify information
Screen calls
Record messages
Relay messages timely
Place calls
Log long-distance calls
Create telephone directories
Maintain telephone directories
Organize teleconferences
Use voice mail/messaging systems

Competency: Use facsimile machine

Competency Builders:

Explain how a facsimile machine operates
Record information regarding material being sent
Operate facsimile
Verify to sender that process has been completed
File copy of facsimile order
Maintain supplies for facsimile use
Log maintenance needs regarding facsimile

Competency: Assist visitors

Competency Builders:

Greet visitors
Screen visitors
Maintain visitor log
Make appropriate introductions
Portray professional image

Competency: Perform scheduling functions

Competency Builders:

Create calendar/schedule
Maintain appointment calendars
Process requests for appointments
Verify appointments

Competency: Use job-related reference materials

Competency Builders:

Identify reference materials
Assemble reference materials
Abstract information from reference materials
Compile data

Competency: Coordinate meeting arrangements

Competency Builders:

Make arrangements with meeting planners
Distribute agenda
Assemble relevant information
Notify participants
Confirm arrangements

Competency: Generate minutes

Competency Builders:

Record appropriate notes
Gather materials
Prepare minutes
Distribute minutes
File minutes

Competency: Coordinate travel plans

Competency Builders:

Check travel resources
Inquire about traveler's preferences
Arrange necessary transportation and lodging
Obtain passports and/or visas
Confirm arrangements
Prepare itineraries
Distribute itineraries
Alter arrangements

Competency: Perform mail functions

Competency Builders:

Identify various mail and delivery services
Process incoming mail
Distribute mail
Operate equipment
Process outgoing mail

Competency: Maintain office supplies

Competency Builders:

Prepare cost justification for purchasing supplies
Order supplies
Verify supply order against supplies
Store and secure supplies
Distribute supplies
Inventory supplies
Prepare inventory reports

Competency: Perform copying functions

Competency Builders:

Use appropriate reference materials
Operate equipment
Collate documents
Maintain equipment
Identify copying methods
Identify best copying method for task
Identify characteristics of paper stock
Keep appropriate records
Identify appropriate copyright applications

Competency: Maintain filing system

Competency Builders:

Give reasons for keeping records
Identify types of records needed
Develop proper techniques/procedures for maintaining records
Use appropriate reference materials
Describe procedure for initial inventory of records
Organize files
Index files
File information
Retrieve information
Consolidate files
Archive or destroy files
Secure files for legality and confidentiality
Follow retention schedule
Create new files
Update files
Prepare materials for filing
Sort documents
Apply cross-referencing and logging systems
Store documents
Locate documents

Competency: Maintain hardware and software

Competency Builders:

Use appropriate reference materials
Evaluate hardware and software
Recommend hardware and software
Schedule routine hardware maintenance
Update software
Report malfunction(s)
Maintain usage logs
Inventory hardware and software

Unit: Office Technology

Competency: Use telecommunications

Competency Builders:

Define the role of telecommunications in business
Use appropriate reference materials
Operate telephone systems
Operate fax machines

Competency: Perform basic word processing functions

Competency Builders:

Create glossary file
Store boilerplate material
Compose documents at keyboard
Tabulate multiple columns
Prepare new documents from existing ones
Merge selected copy with new information
Prepare various types of table options
Index text
Format text
Integrate database, spreadsheet, and graphics files
Convert documents from one system to another
Demonstrate use of computer thesaurus

Competency: Perform transcription functions

Competency Builders:

Identify various types of dictation/transcription equipment
Keyboard documents
Proofread documents
Edit documents
Save documents
Retrieve documents
Print documents

Competency: Use computerized filing system

Competency Builders:

Identify uses for electronic filing system
List advantages and disadvantages of electronic filing
Retrieve information from filing system
Store records electronically
Duplicate records electronically
Transmit records electronically
Maintain financial records

Competency: Perform database functions

Competency Builders:

Identify advanced database technology
Use appropriate reference materials
Create relational database
Enter elements into database
Proofread database
Edit database
Design report formats
Apply database management system (DBMS) commands
Print reports using data from multiple databases
Use database files with other application software
Verify accuracy of output

Competency: Perform desktop publishing functions

Competency Builders:

Define desktop publishing
Explain word processing functions in desktop publishing
Use appropriate reference materials
Use desktop publishing terms
Use desktop publishing software
Use graphic design and layout functions of desktop publishing
Design publications
Merge word-processing, graphics, database, and spreadsheet files
Proofread documents
Edit documents
Save documents
Retrieve documents
Print documents using various output devices

Competency: Perform computer business graphics

Competency Builders:

Define purpose and types of graphics
Use appropriate reference materials
Create graphics
Proofread graphics
Edit graphics
Save graphics
Retrieve graphics
Print graphics to various output devices
Verify accuracy of output
Use graphic functions to create files, input data, process data, and produce output
Use graphics files with other application software

Unit: General Accounting Functions

Competency: Apply arithmetical accounting skills

Competency Builders:

Compute cash discounts for various terms
Compute trade discounts
Compute extension, sales tax, and totals of sales slips
Compute markups and markdowns
Calculate rates of trade and cash discounts
Calculate unit prices given quantity prices
Calculate costs of portions of units
Solve problems involving fractions, decimals, and percentages
Solve commission problems
Solve finance-charge problems
Solve annual percentage rate problems

Competency: Apply accounting principles

Competency Builders:

Define accounting terminology
Define journals and ledgers
Identify basic accounting principles
Identify basic accounting applications
Identify computer accounting applications
Identify financial control procedures
Explain increases and decreases in accounts
Explain periodic reporting procedures
Prepare income statement
Prepare balance sheet columns
Prepare cash flow statement
Interpret balance sheets
Interpret income statements
Interpret cash-flow analysis statements

Competency: Perform manual accounting functions

Competency Builders:

Explain use of record keeping in relation to business and economic applications
Use appropriate reference materials
Analyze transactions
Use "T" accounts to label increases, decreases, and balances
Record transactions
Process receivables
Monitor expense accounts
Process payables
Prepare budgets
Process purchases
Prepare comparative (actual vs. budget) income statement

Competency: Perform automated accounting functions

Competency Builders:

Use appropriate reference materials
Operate equipment
Key data on numeric keyboard
Import or download data from computer records
Scan data from various media
Use integrated software package for simulation of accounting cycle
Set up chart of accounts for general ledger
Set up accounts payable and accounts receivable ledgers
Add accounts to general and subsidiary ledgers
Input account balances
Enter journal transactions
Process journal transaction
Prepare trial balance
Verify data and correct errors
Generate reports
Proofread accounting records and statements
Edit accounting records and statements
Save accounting records and statements
Retrieve accounting records and statements
Print accounting records and statements

Competency: Perform spreadsheet functions

Competency Builders:

Explain computer spreadsheet analysis
Use appropriate reference materials
Operate equipment
Create or format spreadsheet
Enter formulas
Move cells and ranges
Enter data on spreadsheet
Import or download data to spreadsheet
Apply data sort, data query, data fill, and data distribution
Export spreadsheet files to word processing, graphics and database files
Import spreadsheet files to word processing, graphics and database files
Proofread spreadsheet data
Edit spreadsheet data
Verify accuracy of output
Save spreadsheet
Retrieve spreadsheet
Print spreadsheet
Use spreadsheet functions to create files, input data, process data, and produce output
Use spreadsheet files with other application software

Competency: Perform payroll functions

Competency Builders:

Use appropriate reference materials
Collect payroll data
Process payroll
Comply with company policies and procedures
Comply with government and legal requirements
Maintain records and forms
Monitor personnel costs

Competency: Perform banking functions

Competency Builders:

Use appropriate reference materials
Prepare checks, deposit slips, and withdrawal slips
Maintain checkbook
Balance checkbook
Maintain petty cash
Balance petty cash
Explain automated banking transactions
Prepare banking records
Maintain banking records

Competency: Process cost accounting information

Competency Builders:

Define cost accounting, direct materials, direct labor and overhead
Define cost allocation methods
Identify source documents
Compute direct materials by job or process
Compute direct labor by job or process
Compute overhead rates to apply to jobs or processes
Compute cost of goods produced
Compute cost of goods sold
Journalize cost of goods produced and sold entries
Post cost of goods produced and sold entries
Compute cost of inventories
Prepare cost production reports
Prepare related records of job or process costs

Competency: Process end-of-fiscal-period information

Competency Builders:

Prepare worksheet
Prepare trial balance
Foot ledger accounts and compute balances
Prove equality of debits and credits
Locate errors
Record adjustments
Make appropriate extensions
Journalize basic adjusting, closing, and reversing entries
Post basic adjusting, closing, and reversing entries
Prepare basic income statement
Prepare basic balance sheet
Prepare basic cash flow statement

Unit: Specialized Accounting Functions

Competency: Process purchase orders

Competency Builders:

Identify source documents
Verify purchase requisitions
Prepare purchase orders and related documents/records
Prepare receiving reports

Competency: Process purchase invoices

Competency Builders:

Verify invoices against purchase orders and receiving reports
Check invoice calculations
Journalize purchase invoice entries
Post purchase invoice entries

Competency: Process purchase returns and allowances

Competency Builders:

Verify return of goods
Issue debit memorandums
Journalize purchase returns and allowance entries
Post purchase return and allowance entries

Competency: Process accounts payable

Competency Builders:

Identify source documents
Journalize payable entries
Post payable entries
Maintain subsidiary records
Reconcile subsidiary records to accounts payable
Prepare schedule of accounts payable

Competency: Process purchase payables and payments

Competency Builders:

Verify invoices, vouchers, and/or interoffice memorandums for payment
Identify purchase discounts
Prepare checks or electronic transfers
Mark source documents paid
Journalize payment entries
Post payment entries
Adjust subsidiary records

Competency: Process notes and interest payable

Competency Builders:

Identify source documents
Identify appropriate entries for notes payable
Compute payment of notes payable and interest
Record payment of notes payable and interest
Journalize note payables entries
Post note payables entries

Competency: Process invoices and receivables

Competency Builders:

Identify source documents
Verify sales invoices
Journalize sales invoice entries
Post sales invoice entries
Maintain subsidiary records

Competency: Process sales returns and allowances

Competency Builders:

Verify sales returns and allowances
Prepare credit memorandums
Journalize sales returns and allowance entries
Post sales return and allowance entries
Adjust subsidiary records

Competency: Process uncollectible accounts

Competency Builders:

Prepare schedule of aged accounts receivable
Apply company policies and procedures to determine uncollectibles
Prepare related documents
Journalize uncollectible account entries
Post uncollectible account entries
Adjust subsidiary records

Competency: Process collections

Competency Builders:

Identify due dates for various discount terms
Compare receipts with amount due
Verify checks, money orders, credit card receipts, and cash
Prepare cash proofs
Prepare deposits
Verify sales discounts
Prepare related documents
Journalize receipt entries
Post receipt entries
Adjust subsidiary records

Competency: Process notes and interest receivables

Competency Builders:

Identify source documents
Identify appropriate entries for notes receivable
Compute and record principal and interest of notes receivable entries
Journalize notes receivable entries
Post notes receivable entries

Competency: Perform checking account functions

Competency Builders:

Issue checks
Keep check records
Journalize entries
Post entries
Reconcile bank statement
File checks and deposit slips

Competency: Maintain petty cash fund

Competency Builders:

Set up petty cash fund
Pay petty cash vouchers
Reconcile petty cash fund
Replenish petty cash fund
Journalize petty cash transaction entries
Post petty cash transaction entries

Competency: Process employee payroll records

Competency Builders:

Obtain required employee forms
Set up employee payroll records
Update employee earnings records
Update employee benefits records
Prepare payroll distribution forms
Process employee time information

Competency: Process payroll

Competency Builders:

Calculate regular and overtime hours
Compute gross earnings
Compute deductions
Compute net pay
Prepare voucher checks
Prepare payroll checks
Journalize payroll entries
Post payroll and deduction entries

Competency: Process employer payroll taxes

Competency Builders:

Apply payroll laws and regulations
Prepare required tax deposits/payments
Prepare payroll tax returns as required
Prepare employee tax forms and reports as required
Journalize employer's payroll tax entries
Post employer's payroll tax entries
Post recorded liability for payroll tax entries
Post withholding and payroll taxes

Competency: Process accruals and deferrals

Competency Builders:

Define accruals and deferrals
Calculate amounts to be accrued and deferred
Journalize accrued and deferred liability and revenue entries
Post accrued and deferred liability and revenue entries
Journalize reversing entries as required
Post reversing entries

Competency: **Use financial statements to make business decisions**

Competency Builders:

Prepare balance sheet
Prepare income statement
Prepare cash-flow analysis
Prepare break-even analysis
Prepare budgets
Prepare comparative financial statement
Prepare cost and revenue analysis
Interpret financial statements
Make financial recommendations

Competency: **Update value of plant and equipment assets**

Competency Builders:

Differentiate between revenue and capital expenditures
Define depreciation methods
Calculate depreciation
Journalize plant and equipment asset entries
Post plant and equipment asset entries
Journalize depreciation entries
Post depreciation entries
Record disposition of plant assets by selling, discarding, and trading
Post disposal of plant and equipment asset entries

Unit: Business Law

Competency: Explain legal rights and responsibilities

Competency Builders:

Describe different types of laws
Identify rules of law affecting minors
Describe differences between crimes and torts
Describe court system and how a case goes to trail

Competency: Demonstrate knowledge of labor law

Competency Builders:

Describe rights and responsibilities of parties to an employment contract
Identify state and federal laws dealing with employment
Identify protections available to employees

Competency: Demonstrate knowledge of environmental law

Competency Builders:

Describe EPA regulations
Identify environmental regulation agencies (e.g., EPA, OSHA, TASA, RCRA, DOT)
Use reference applicable materials
Explain reporting procedures for violations to appropriate agencies
Identify reporting procedures and forms used
Identify industrial hygiene law and regulations (e.g., NIOSH)

Competency: Demonstrate knowledge of contract law

Competency Builders:

Analyze elements of a contract
Differentiate between contracts that are transferable and contracts that are not transferable
Identify means of discharging contracts
Describe means of discharging contracts
Describe remedies available for a breach of contract

Competency: Demonstrate knowledge of corporation law

Competency Builders:

Explain the different types of business structures (e.g., sole proprietorship, general partnership, limited partnership, corporation including subchapter S)
Describe how to form a corporation
Describe the difference between equity and debt securities
Identify the principle/agent relationship and the basic terms of employment agreements
Identify special forms of corporations
Name corporation purpose and structure

Competency: Demonstrate knowledge of consumer law

Competency Builders:

Describe types of negotiable instruments
Describe laws related to buying on credit
Explain negotiable instruments
Identify factors to consider when borrowing money
Describe laws that apply to the collection of negotiable instruments
Identify regulatory agencies (e.g., FDIC, FTC)
Explain retirement plans (e.g., IRAs, 401Ks)

Competency: Demonstrate knowledge of real estate law

Competency Builders:

Describe legal documents relating to residential transactions
Explain a residential real estate settlement procedure
Describe title insurance and financing documents
Identify various documents relating to the sale of commercial property
Explain a commercial real estate settlement

Competency: **Demonstrate knowledge of estates, trusts and wills**

Competency Builders:

Explain information needed to administer an estate
Identify legal procedure of Letters Testamentary and Letters of Administration through probate
Demonstrate other legal procedures pertinent to estates
Explain court documents commonly filed in connection with estate administration
Identify tax returns for an estate
Explain wills and inter-vivos trusts

Unit: Computer Operations

Competency: Operate computer systems

Competency Builders:

Define job, batch, and job step
Describe data requirements
Use appropriate reference materials
Perform power-up and log-on procedures
Demonstrate basic programming skills
Use console device to interact with and respond to system messages
Secure supplies and resources
Follow processing procedures for each application/job
Run application/job
Describe scheduling priority
Describe transmittal form and transmittal log
Develop an audit trail
Handle materials and equipment in a responsible manner
Use electronic data interchange (EDI)

Competency: Maintain computer systems

Competency Builders:

Monitor system status and performance
Run diagnostics
Report computer system malfunction(s)
Report software malfunction(s)
Fix recoverable problems
Maintain security
Maintain computer log
Perform backup procedure(s)
Perform preventive maintenance
Follow log-off and power-down procedure(s)
Follow equipment maintenance procedures
Follow quality control procedures
Describe operator duties and job scheduling

Competency: Maintain security requirements

Competency Builders:

Apply business ethics
Follow security rules, regulations, and codes
Implement security procedures
Document security procedures
Perform security checks

Competency: Explain operation of peripheral devices

Competency Builders:

Identify peripherals and operating requirements of each
Identify primary devices used for personal computer auxiliary storage
Describe how data is stored on diskettes and hard drives
List speed and storage capacities of computer auxiliary storage devices
Describe attributes of diskettes and hard disks regarding speed and storage capacity
List types of disk storage used with large computer systems
Define role of tape storage in relation to personal and large computers
Describe security issues
Explain purpose of input devices (e.g., keyboard, mouse, scanners, pens, bar code readers, credit/debit/smart cards, voice, video, gloves, joysticks)
Describe operation of output devices (e.g., voice, speaker output devices, printers, plotters, printer sharing units, SCSI interface, video display)
Describe operation of multimedia (e.g., video, audiosound)
Describe operation of storage devices (e.g., tape, disk, CD-ROM)

Competency: Operate peripheral devices

Competency Builders:

Use appropriate reference materials
Load media devices
Start media devices
Unload media devices
Import, edit, and export video and audio
Set up print devices
Operate scanner devices
Operate print devices
Maintain print devices
Monitor peripheral equipment operations
Perform routine maintenance on peripheral devices
List appropriate control procedures
Demonstrate output processing, bursting, decollating, splitting, and shredding
Transmit via modem
Receive via modem
Search a CD-ROM library
Print information from a CD-ROM library
Describe device driver

Competency: Store media

Competency Builders:

Identify need for data library
Use appropriate reference materials
Retrieve stored media (e.g., on-line, off-line, permanent, off-site)
File stored media (e.g., on-line, off-line, permanent, off-site)
Initialize media
Catalog media
Maintain supplies
Maintain media library
Maintain backup records
Maintain company and/or government standards for media security
Maintain archives of company records required by policy or law

Competency: Maintain microcomputers

Competency Builders:

Use appropriate reference materials
Install PC
Change hardware
Set up system configuration
Install software packages
Respond to system messages
Run software applications
Back up systems
Restore systems
Report computer malfunction(s)
Report software malfunction(s)
Perform preventative maintenance

Competency: Explain operating systems

Competency Builders:

Identify operating systems and their attributes
Describe how commands handle tasks in operating systems
Describe various input/output systems
Describe the purpose of operating system utilities
Differentiate between a compiler and an interpreter
Describe the processing that occurs when an interpreter is used
Describe the processing that occurs when a compiler is used

Unit: Network Operations

Competency: **Explain communication standards**

Competency Builders:

Identify the seven layers of the International Organization Standard's Open System Interconnection (OSI) Model
Describe each OSI layer, including their interconnectivity
Identify software standards for subnet, presentation layers, and file servers

Competency: **Describe network structures**

Competency Builders:

Differentiate topologies (e.g., hierarchical, ring, star)
Differentiate architecture(s)
Explain layering
Describe protocols (e.g., TCP/IP, IPX/SPX, etc..)
Describe frame types (e.g., SNA<802.3, 802.5)
Define local area network
Define different types of LANs
Differentiate between network operating systems and data distribution systems
Identify advantages and disadvantages of various LAN operating systems
List duties of LAN supervisor

Competency: **Explain network transmission and media**

Competency Builders:

Explain signals
Explain patterns
Explain error detection and correction
Explain speed of transmission
Explain use of media
Explain use of equipment
Explain role of network manager

Competency: **Explain network connectivity and interoperability**

Competency Builders:

Identify equipment connecting devices
Differentiate between sync and async devices
Identify software connecting devices
Identify media connecting devices
Identify type of interoperability (e.g., peer-to-peer, peer-to-host)
Identify problems of mixed vendor network implementation
Describe internetworking solutions
Describe cabling schemes and alternatives
Identify network topologies
List pros and cons of network interface cards
List pros and cons of network servers
Explain why internetting is useful or necessary
Describe levels at which internetting can occur
Identify protocols used for remote interconnecting and when each should be used
List common pitfalls when networking computers
Identify method used to evaluate emulators
Describe gateways (e.g., mainframe, protocol)

Competency: **Describe network operating systems**

Competency Builders:

Identify responsibilities of a network operating system
Explain installation procedure for network operating systems
Explain commands needed to use network operating systems
List characteristics of a network interface card (NIC)
Define criteria used to describe network servers
Define criteria used to evaluate network operating systems

Competency: **Describe potential networking problems with applications software**

Competency Builders:

Describe potential hard disk compatibility problems
Differentiate between site multi user and single user licenses
Describe necessary precautions included in programs used on networks

Competency: Explain network management

Competency Builders:

List steps in mapping a network
Explain why files must be organized according to owners, users, and privileges
Describe common standards for setting up and naming files
List criteria used to determine if a file should be network accessible
Identify methods to increase performance
Define hierarchical directory
Explain methods used to determine how many servers should be used
State reasons for channel and cable bottlenecks

Competency: Explain network security

Competency Builders:

Explain need for data protection
Identify common backup devices
Explain criteria for selecting a tape system
Differentiate between hard and soft errors
Contrast streaming and file-by-file backup systems
Explain process for archiving files
Explain necessity for network security
Identify levels of network sedulity and reasons for their existence

Competency: Explain installation procedures

Competency Builders:

Explain why an installation log is necessary
Identify methods of distributing cable, including modeling examples
Identify problems associated with cable installation
Describe types of cable, cable connectors, and grounding techniques
Explain cable testing and tolerance levels
Identify sources of interference and include methods to overcome each

Competency: Use network knowledge

Competency Builders:

Use electronic/voice/multi-media mail
Share files
Use dial-in access
Make backups
Share resources
Explain software control
Apply security and authentication

Competency: Apply network operations

Competency Builders:

Assess user needs to determine which LAN operating systems to use
Demonstrate applications used on LANs
Describe how the network protocols work together
Operate the system in a multi-user environment
Demonstrate knowledge of various networks and compatibility
Differentiate among various topologies
Identify which network operating system to use
Build synchronous transmission circuit using a modem
Build synchronous transmission circuit using a modem
Connect PCs to form a network
Connect two PCs networks
Perform file to file copy in a PC network
Implement print queue in a PC network
Configure file server in a PC network
Connect PC to mini or mainframe
Link mixed vendors (e.g., PC to Mac)
Interconnect via backbone network
Build small ethernet or token ring network

Competency: Administer network

Competency Builders:

Use appropriate reference materials
Apply current LAN concepts and technology
Attach computers and peripherals to LAN
Change computer hardware
Set up system configuration
Install LAN manager software
Install software packages
Respond to system messages
Troubleshoot system
Run software applications
Back up and restore systems
Perform system analysis
Use security procedures
Perform preventative maintenance
Select access control and security
Outline resource management
Install cabling
Install network
Analyze network operations
Check physical and virtual connections
Modify network
Apply standards
Acquire licensing
Plan disaster recovery
Address protocols (e. g., ethernet, token ring, Arcnet)
Monitor network activity/performance

Competency: Perform network maintenance and diagnostics

Competency Builders:

Execute network diagnostics program for software
Execute network diagnostics program for hardware
Apply standard and protocols
Document action(s) taken

Unit: Small Business Management

Competency: Explain entrepreneurship

Competency Builders:

Identify characteristics of entrepreneurs
Identify qualities and skills needed by business owners
Identify means of obtaining technical assistance
Identify advantages and disadvantages of owning a small business
Identify personal risks of owning a small business
Describe basic factors contributing to business success
Describe a franchise-dealer relationship

Competency: Evaluate entrepreneurship as a personal goal

Competency Builders:

Evaluate personal interests and resources (e.g., time, energy, skills)
Compare personal interests and skills with those necessary for entrepreneurship
Assess aptitude to become a successful entrepreneur
Identify motives for becoming an entrepreneur

Competency: Develop a business plan

Competency Builders:

List sources of information for starting a business
Classify local and state requirements for starting business
Identify risks of creating a new business
Differentiate among market characteristics
Analyze financing of business ownership
Develop marketing strategies

Competency: Identify role of small business in the economy

Competency Builders:

Identify factors that contribute to the success and failure of small business
Describe effects of supply, demand, profit, and competition on small business
Explain relationship of small business to a national (USA) and global economy

Competency: Analyze how legislation affects small business

Competency Builders:

Identify legal issues faced by entrepreneurs
Describe the relationship between government and entrepreneurs
Explain the effects of regulation on the business operation
Identify when and how to obtain appropriate legal assistance
Participate in the legislative process

Competency: Evaluate factors affecting small business management

Competency Builders:

Identify advantages and disadvantage of various types of ownership
Identify cooperative arrangements
Describe legal forms of retail businesses
Differentiate between various types of insurable business risks
Describe social and ethical problems that affect business
Classify types of government regulations that affect business
Analyze current trends in business
List costs that must be considered when starting a business
Select best location and layout for a business

Competency: Identify marketing mix

Competency Builders:

Explain importance of having the right product
Explain importance of having the product at the right place
Explain importance of having the product with the right promotion
Explain importance of having the product at the right price
Explain importance of having the product at the right time

Competency: Promote products and/or services

Competency Builders:

Explain selling function
Explain promotion function
Describe relationship of sales to promotion
Describe how to plan for special events and public relations activities
Explain importance of maintaining a check on competitors' promotions
Identify factors used to select appropriate products
Prepare merchandise/buying plan
Maintain vendor information and select appropriate vendors
Identify selling price
Keep abreast of merchandising trends

Competency: Manage customer relations

Competency Builders:
Identify advantages of customer services and accommodations
Identify advantages of attractive, comfortable facilities
Explain importance of price, quality, and variety
Use acceptable techniques in handling customer complaints

Competency: Minimize internal theft

Competency Builders:

Establish internal theft policy
Identify types of internal loss
Identify potential loss situations
Report employee theft
Follow company policies regarding internal theft
Follow security procedures

Competency: Explain financing methodologies

Competency Builders:

Explain leasing
Explain stock ownership
Explain bond ownership
Explain convertible securities
Explain bank loans

Competency: Identify costs of financial services

Competency Builders:

Classify revenue and expenses
Speculate on revenue sources and expenses
Identify start-up costs
Explain means of obtaining financial assistance
Explain importance of a sound credit rating
Outline long-range financial plans
Explain how sources of finance are used in business operations
Compare financial services available from financial institutions

Competency: Prepare financial records and reports

Competency Builders:

Record receipts and payments
Adjust cash flow upon the introduction of a variable
Justify budget items
Record income and expenditures
Report employee records for audit and taxation purposes

Competency: Explain management's role in operating a business

Competency Builders:

Explain importance of organizational skills
Identify management functions performed by entrepreneurs
Describe responsibilities and rewards of small business management
Compare specific management techniques
Explain importance of time management
Identify benefits of membership in professional/trade associations
Identify professional support system(s)
Explain need for basic accounting skills
Identify free sources of information and support
Explain importance of fundamental marketing skills
Describe benefits of continuous employee training

Competency: Practice safety precautions

Competency Builders:

Maintain safe work area
Operate equipment safely
Practice safety to prevent accidents
Follow procedures for reporting accidents
Follow safety procedures for special populations
Follow government regulations (e.g., OSHA, EPA)
Follow sanitation and hygiene procedures
Report emergencies to proper authorities
Identify emergency evacuation plans
Operate fire and safety equipment

Competency: Comply with government regulations

Competency Builders:

Identify sources of information and assistance
Identify regulations, licensing, and permits affecting business operations
Identify taxes affecting small businesses
Develop policies of compliance
Develop basic first aid skills
Monitor changing regulations

Competency: Perform management activities

Competency Builders:

Define management
Describe basic principles of good management
Identify effective leadership traits
Develop management objectives
Explain role of management in operating a business
Identify purposes of forecasting
Identify purpose of selecting appropriate marketing strategies
Develop short-term and long-term action plans
Describe importance of performance measurements and record keeping
Explain importance of keeping informed of developments and trends affecting business
Explain importance of planning for emergencies
Prepare managerial reports about production, personnel, equipment, and operational costs
Identify elements of a general budget
Describe use of credit by a business
Identify accounting statements that provide business information
Develop short/long range plans including Equal Access/Equal Opportunity (EAEO) guidelines
Develop procedures for handling employee complaints
Evaluate job applicants
Recommend employees for promotion
Identify contract laws
Describe the effects of insurance
Describe risk management alternatives (e.g., fire, theft, liability)
Describe consumer credit plans
Describe procedures for collection of accounts
Explain inventory control systems
Explain need for an equipment maintenance plan
Explain need for a facility maintenance plan

Unit: Supervision

Competency: **Manage human resources**

Competency Builders:

Apply appropriate management and leadership styles
Use foresight to anticipate and manage change
Display managerial and supervisory skills
Apply human relations skills
Develop management objectives
Create and/or implement organizational charts
Clarify company policies and procedures
Maintain office procedures manual(s)
Establish office procedures
Prepare and/or monitor budgets
Prepare managerial reports
Analyze production reports
Maintain appropriate work environment
Conduct tours
Monitor progress
Prepare and communicate productivity reports
Provide and/or coordinate training for new policies
Troubleshoot office problems
Communicate performance expectations
Counsel employees about career objectives
Maintain performance records
Adhere to company policies regarding discrimination and harassment
Address employees regarding disciplinary action(s)
Recommend employees for promotion
Explain procedure for handling grievances
Evaluate employee performance
Document personnel issues

Competency: Manage projects

Competency Builders:

Conduct needs analysis
Set priorities
Research information
Develop goals and objectives
Develop strategic plan
Develop project budget
Apply forecasting techniques
Apply prioritizing techniques
Schedule work assignments
Collect data
Analyze data
Act on data
Monitor project progress
Meet project timelines
Monitor budget
Apply quality measures and counter measures

Competency: Manage work flow

Competency Builders:

Plan office layout for workflow
Create organizational charts
Communicate operating policies and procedures
Maintain office procedures manual(s)
Identify production standards
Interface with other departments
Prioritize work
Assign work
Delegate work
Provide instruction
Monitor progress
Complete productivity and/or managerial reports
Complete assigned tasks in a timely manner
Coordinate with team members

Competency: Conduct staff/team meetings

Competency Builders:

Plan meeting
Set agenda
Set and schedule meeting
Schedule meeting room
Invite appropriate personnel
Identify need for outside speakers
Assign someone to take minutes
Make introductions
Invite questions and comments, and group participation
Focus on agenda items, but maintain issues list as they arise
Decide appropriate action, time frame, and accountability to tasks
Monitor time
Close meeting on time
Publish minutes in timely manner to appropriate persons

Competency: Conduct training

Competency Builders:

Secure training resources, materials, and equipment
Assess training needs
Train employees
Evaluate progress
Provide appropriate feedback
Document training participation

Financial Management Assistant

NOTE: Each TCP should respond to labor market demands in your area. Therefore, the following pages should be examined before being selected for use in TCP Part I (See "The TCP Process" Tab). For example, some units may not apply to your situation, nor might all the competencies within each unit be appropriate. Also, note that several units appear within each of the twelve occupations in this binder. Those "common" units should only appear once in the draft competency list for TCP Part I if you are compiling several occupations in a cluster format (See "TCP Matrix" Tab).

Units to Consider:	Page
Employability Skills	FM-3
Professionalism	FM-8
Teamwork	FM-12
Professional and Ethical Standards	FM-14
Economic and Business Principles	FM-16
Customer Relations	FM-20
Problem Analysis	FM-21
Project Management	FM-22
Technical Documentation	FM-23
Basic Personal Computer Concepts	FM-24
Packaged PC Applications	FM-26
General Office Functions	FM-31
Office Technology	FM-37
General Accounting Functions	FM-40
Specialized Accounting Functions	FM-45
Business Law	FM-51
Computer Operations	FM-54
Small Business Management	FM-58
Supervision	FM-64

DON'T FORGET TO INSERT YOUR ACADEMIC COMPETENCIES HERE

Communications Literacy, Mathematics Literacy, Science Literacy, and Technology Literacy have been removed so that you may insert your own academic lists here.

COMMUNICATIONS LITERACY

(e.g., Reading, Writing, Speaking, and Listening)

MATHEMATICS LITERACY

(e.g., Algebra, Geometry, Trigonometry, Calculus)

SCIENCE LITERACY

(e.g., Physical Science, Environmental Science, Agriscience, Biology, Chemistry, Physics, Anatomy & Physiology)

TECHNOLOGY LITERACY

(i.e., the impact of technology on humans and their home, work, and play environments)

Unit: Employability Skills

Competency: **Develop a career plan**

Competency Builders:

Identify current interests and aptitudes
Identify common barriers to employment
Describe strategies to overcome employment barriers
Locate resources for finding employment
Research job trends
Identify career options
Identify advantages and disadvantages of career options (in addition to other than monetary)
Identify job requirements
Investigate education/training opportunities
Evaluate personal strengths and weaknesses

Competency: Prepare for employment

Competency Builders:

Identify traditional and non-traditional employment sources
Identify present and future employment opportunities (by geographic location)
Research job opportunities, including non-traditional careers
Compare salary ranges and benefit packages
Compile occupational profile
Identify rights and responsibilities of equal employment opportunity laws
Design resume and cover letter
Target resume
Secure references
Investigate generic and specific employment tests (e.g., civil service exam; drug screening)
Use follow-up techniques to enhance employment potential
Demonstrate legible written communication skills using correct grammar, spelling, punctuation, and concise wording
Describe methods for handling illegal questions on job application forms and during interviews
Write letter of application
Research prospective employer and services performed
Explain critical importance of personal appearance, hygiene, and demeanor
Interpret job description
Demonstrate appropriate interview question and answer techniques
Demonstrate methods for handling difficult interview questions
Evaluate job offers
Write letter of acceptance
Write letter of declination
Demonstrate good listening skills
Ask for the job tactfully
Participate in extracurricular activities (e.g., student government, community projects,)

Competency: Evaluate the importance of self-esteem as an employability skill

Competency Builders:

Identify factors that affect self-esteem
Compare effects of low self-esteem and high self-esteem
Identify strategies to promote positive self-esteem

Competency: Demonstrate job retention skills

Competency Builders:

Identify employer expectations regarding job performance, work habits, attitudes, personal appearance, and hygiene
Exhibit appropriate work habits and attitude
Demonstrate ability to set priorities
Identify behaviors to establish successful working relationships
Identify alternatives for dealing with harassment, bias, and discrimination based on race, color, national origin, sex, religion, handicap, or age
Identify opportunities for advancement
List reasons for termination
List consequences of being absent frequently from job
List consequences of frequently arriving late for work
Demonstrate interpersonal relations skills (i.e., verbal and written)
Demonstrate negotiation skills
Demonstrate teamwork
Follow chain-of-command
Exhibit appropriate job dedication

Competency: Demonstrate knowledge of work ethic

Competency Builders:

Define work ethic
Identify factors that influence work ethic
Differentiate law and ethics
Describe how personal values are reflected in work ethic
Describe how interactions in the workplace affect personal work ethic
Describe how life changes affect personal work ethic

Competency: Exhibit appropriate work ethic

Competency Builders:

Use time-management techniques
Avoid personal activity during work hours
Attend work as scheduled
Adhere to company and/or governmental policies, procedures, rules, and regulations
Exercise confidentiality
Demonstrate appropriate human relations skills
Adhere to rules of conduct
Accept constructive criticism
Offer constructive criticism
Take pride in work
Resolve conflict
Manage stress
Avoid sexual connotations and harassment
Adjust to changes in the workplace
Demonstrate punctuality
Assume responsibility for personal decisions and actions
Take responsibility for assignments
Follow chain-of-command

Competency: Apply decision-making techniques

Competency Builders:

Identify decision to be made
Identify ownership of decision to be made
Identify possible alternatives and their consequences
Make decisions based on facts, legality, ethics, goals, and/or culture
Apply time factor(s)
Present decision to be implemented
Evaluate decision made
Take responsibility for decision

Competency: Apply problem-solving techniques

Competency Builders:

Identify problem
Select appropriate problem solving tools/techniques
Identify root problem cause(s)
Track root problem cause(s)
Identify possible solutions and their consequences (e.g., long term, short term, crisis)
Use resources to explore possible solutions to problem
Contrast advantages and disadvantages of each solution
Identify appropriate action
Evaluate results
Identify post-preventive action

Competency: Exhibit characteristics for job advancement

Competency Builders:

Display positive attitude
Demonstrate knowledge of position
Perform quality work
Adapt to changing situations and technology
Demonstrate capability/responsibility for different positions
Identify characteristics of effective leaders
Identify opportunities for leadership in work place/community
Demonstrate initiative to affect change in workplace
Participate in continuing education/training program
Responds appropriately to criticism from employer, supervisor, or other employees
Exhibit awareness of corporate culture
Prepare for job setbacks
Exhibit continual growth based on performance evaluation
Set realistic goals

Unit: Professionalism

Competency: **Project professional image**

Competency Builders:

Define professionalism
Exhibit professional appearance
Exhibit professional manners
Project professional attitude
Identify individuals' vital role in organization
Exhibit proper etiquette in professionally-related situations

Competency: **Achieve individual and professional goals**

Competency Builders:

Set flexible, realistic, and measurable goals
Identify potential barriers to achieving goals
Identify strategies for addressing barriers to goal achievement
Breakdown long-term goals into short-term goals
Prioritize goals
Commit to goals
Adjust goals
Obtain support for goals
Reward goal achievement

Competency: **Manage personal finances**

Competency Builders:

Explain need for personal management records
Balance checkbook
Identify tax obligations
Analyze how credit affects financial security
Compare types and methods of investments
Compare types and methods of borrowing
Compare types and methods of insurance
Compare types of retirement options/plans
Identify discriminatory vs. non-discriminatory expenditures

Competency: Support community well-being

Competency Builders:

Identify environmental, educational, and social issues
Participate in social and/or community activities

Competency: Achieve organizational goals

Competency Builders:

Evaluate personal goals in relation to organizational goals
Monitor progress by evaluating feedback
List responsibilities in relation to organization goals
Accomplish assigned tasks
Exercise responsibility in relation to organizational goals
Set appropriate personal performance standards
Communicate goals with supervisor and peers
Demonstrate knowledge of products and services
Promote organizational image and mission

Competency: Demonstrate positive relations in the workplace

Competency Builders:

Identify personality types of self and other
Identify various management styles
Support employer expectations
Support employer decisions
Accept constructive criticism
Give constructive feedback
Adapt to changes in workplace
List factors to consider before resigning
Write letter of resignation

Competency: **Manage stressful situations**

Competency Builders:

Accept stress as part of daily life
Identify personal and professional factors contributing to stress
Describe physical and emotional responses to stress
Evaluate positive and negative effects of stress on productivity
Identify strategies for reducing stress
Implement strategies to manage stress
Create strategies for developing and maintaining support systems

Competency: **Analyze effects of family on work and work on family**

Competency Builders:

Identify how family values, goals, and priorities are reflected in work place
Identify responsibilities and rewards associated with paid and non-paid work
Identify responsibilities and rewards associated with families
Explain how family responsibilities can conflict with work
Explain how work can conflict with family responsibilities
Explain how work-related stress can affect families
Explain how family-related stress can affect work
Identify family support systems and resources
Identify work-related support systems and resources
Communicate with family regarding work

Competency: **Apply lifelong learning skills**

Competency Builders:

Define lifelong learning
Identify factors that cause need for lifelong learning
Analyze effects of change
Identify reasons why goals change
Describe importance of flexibility and adaptability
Evaluate need for continuing education/training

Competency: Manage professional development

Competency Builders:

Identify career opportunities
Modify career plan
Participate in continuing education/training opportunities
Document continuing education/training
Read profession-related manuals, technical journals, and periodicals
Attend meetings, workshops, seminars, conferences, and demonstrations
Participate in professional organizations
Build personal/professional mentor relationship
Build personal/professional support system
Build professional network
Strengthen communication skills
Strengthen leadership skills
Strengthen management skills

Unit: Teamwork

Competency: Demonstrate knowledge of teamwork

Competency Builders:

Define empowerment
Differentiate work groups and teams
Identify conditions essential to teamwork (e.g., brainstorming)
Explain influence of culture (e.g., corporate, community) on teamwork
Identify appropriate situations for using teams
Define team structures (e.g., cross functional, quality improvement, task force, quality circles)
Identify team building concepts
Describe characteristics and dynamics of teams
Identify characteristics of effective team leaders and members
Identify responsibilities of a valuable team member
Identify methods of involving each member of a team
Explain how individuals from various backgrounds contribute to work-related situations (e.g., technical training, cultural heritage)
Explain the purpose of facilitators
Define consensus
Define reward/recognition system

Competency: Demonstrate teamwork

Competency Builders:

Identify purpose of team and intended goal (include time frames)
Structure team around purpose
Define responsibilities of team members
Contribute to efficiency and success of team
Work toward individual and team milestones
Analyze results of team project
Facilitate a team meeting
Assist team member(s) with problem
Monitor time frame
Stress continuous improvement
Accept failure as part of learning

Competency: Use teamwork to solve problems

Competency Builders:

Identify appropriate situations for using teams
Use problem-solving process in a team setting
Identify quality management processes/techniques
Identify quality assurance processes/techniques
Prepare presentation

Competency: Conduct team meetings

Competency Builders:

Plan agenda
Schedule meeting and location
Invite appropriate personnel
Solicit outside speakers as needed
Assign someone to take minutes
Facilitate introductions
Invite questions and comments and group participation
Focus team on agenda items
Assign appropriate action, time frame and accountability to tasks
Monitor time
Close meeting on time
Publish minutes in timely manner
Set ground rules
Avoid placing individual agendas above the group's agenda

Unit: Professional and Ethical Standards

Competency: Explain professional responsibilities

Competency Builders:

Explain the need for professional and ethical standards
Explain responsibility of the individual to apply ethical standards
Identify responsibility to client(s) or employer(s)
Explain employer's consequences of unprofessional and/or unethical employee behavior
Identify responsibility to self (e.g., professional appearance and limitations) and to profession
Explain importance of conflict resolution in the workplace

Competency: Describe self-managed employees

Competency Builders:

Explain the need for organizing tasks
Explain management-by-objectives
Explain importance of planning, both long-term and short-term
Explain importance of evaluating progress
Explain importance of reporting progress
Explain time management
Explain the benefit of creative brainstorming and innovative thinking

Competency: Describe intellectual property

Competency Builders:

Explain legal ownership of proprietary assets produced by the computing professional
Explain public policy
Explain rights of the originator
Explain rights of the public
Explain patent
Explain copyright
Explain licenses
Explain confidentiality

Competency: Apply professional and ethical standards

Competency Builders:

Identify computing industry's standards
Describe computing industry's code of ethics
Explain various ethics established by computing societies
Apply various ethics established by computing societies

Unit: Economic and Business Principles

Competency: Describe basic economic concepts

Competency Builders:

Identify importance of economic resources
Explain concept of economic resources
Explain importance of economic resources
Explain concept of economic goods and services
Differentiate between economic goods and services
Differentiate between needs and wants
Explain concept of supply and demand
Explain concept of price
Explain how supply, demand, and price are related
Explain concept of private enterprise and business ownership
Explain concept of profit
Explain concept of risk
Explain concept of competition
Explain relationship among risk, competition, and profit

Competency: Conduct training

Competency Builders:

Secure training resources, materials, and equipment
Assess training needs
Train employees
Evaluate progress
Provide appropriate feedback

Competency: Evaluate economic systems

Competency Builders:

Compare types of economic systems
Research free enterprise system
Interpret relationship between government and business
Interpret relationship between labor and management

Competency: Illustrate basic economic principles

Competency Builders:

Illustrate global economic and world market applications
Illustrate economic cycles (e.g., unemployment, recession, inflation, budget deficits)
Illustrate economic activity's affect on business (e.g., financial, competitor indicators, industry)

Competency: Analyze cost and profit influences

Competency Builders:

Identify importance of maximizing quality
Identify importance of maximizing productivity
Contrast specialized training and cross training
Contrast labor and management
Contrast government and business

Competency: Illustrate economic indicators and trends

Competency Builders:

Define gross national product and gross domestic product
Interpret impact of interest rates
Interpret impact of government spending
Interpret impact of seasonal business cycles
Interpret impact of inflation, growth, recession, and unemployment
Interpret impact of national and world events
Interpret impact of the growth of international trade

Competency: Explain basic international trade concepts

Competency Builders:

Explain nature and importance of international trade
Contrast advantages and disadvantages of marketing in international trade
Explain balance of trade concepts
Describe impact of foreign investment

Competency: Explain basic business concepts

Competency Builders:

Identify functions of business
Explain role of management
Explain role of labor
Explain concept of service as a product
Explain role of administration
Explain role of operations
Identify role of company objectives
Identify importance of ethical business practices
Identify types of ownership
Identify components of a business plan

Competency: Summarize business principles

Competency Builders:

Explain business organizations and functions
Describe business reporting and information flow
Map interface of departmental functions
Identify communication channels (e.g., formal, informal)
Explain total quality management (TQM) principles

Competency: Illustrate legal concepts

Competency Builders:

Define legal terminology
Explain business law concepts
Interpret contracts and/or legal documents
Explain relationship of laws and regulations to company contracts, policies, and procedures
Explain laws relating to working conditions, wages and hours, civil rights, social security, disability, and unemployment insurance

Competency: Explain role of marketing

Competency Builders:

Explain aspects of sound business image
Identify purposes of marketing
Identify functions of marketing
Describe effects of marketing
Explain product/service variety
Identify target markets
Define sales potential
Explain pricing strategies
Differentiate advertising campaigns
Explain advantages and disadvantages of advertising agencies
Describe sales incentive programs
Maintain marketing feedback and make appropriate changes
Identify types of marketing strategies and the advantage and disadvantage of each
    (e.g. phone, mail, person)
Design monitor plan

Competency: Serve customers/clients

Competency Builders:

Identify importance of customer
Identify customer services to provide
Relate to customers in timely fashion
Identify customer needs and wants
Gather complete and accurate information
Apply customer service concepts and terminology
Identify methods for addressing dissatisfied customers

Unit: Customer Relations

Competency: Demonstrate positive relations with customers

Competency Builders:

Identify importance of customers to business
Differentiate between customer needs and wants
Provide prompt and courteous service
Resolve customer inquiries and complaints and/or refer customer to appropriate person
Identify methods of addressing dissatisfied customers

Competency: Perform scheduling functions to meet customers needs

Competency Builders:

Create calendar/schedule
Maintain appointment calendars
Process requests for appointments
Verify appointments
Notify customer of changes in schedule
Manage scheduling conflicts

Unit: Problem Analysis

Competency: Appraise situations

Competency Builders:

Identify concerns
Classify concerns
Set priorities
Identify resolution process
Plan resolution

Competency: Analyze potential problems

Competency Builders:

Identify potential problems
Identify likely causes
Identify preventive actions
Identify contingent actions

Competency: Analyze actual problems

Competency Builders:

Identify deviation
Identify problem and possible causes
Test for probable causes
Verify cause

Competency: Analyze decisions

Competency Builders:

Identify objective(s)
Classify objective(s)
Identify alternatives
Evaluate alternatives
Assess risks
Make final choice

Unit: Project Management

Competency: Explain project management

Competency Builders:

Identify project purpose/goal
Identify project objectives
Identify work breakdown structure (WBS)
Identify resource requirements

Competency: Plan projects

Competency Builders:

Apply responsibility assignment matrix (RAM)
Apply Gantt or bar charts
Apply network diagrams
Apply critical path method (CPM)
Apply project education and review techniques
Apply software programs

Competency: Implement projects

Competency Builders:

Monitor project
Control project
Modify project

Competency: Evaluate projects

Competency Builders:

Analyze performance
Close-out project evaluation
Draw project management conclusions

Unit: Technical Documentation

Competency: **Demonstrate proficiency in technical documentation**

Competency Builders:

Identify parameters
Ask questions
Interpret specifications or drawings
Record process (e.g., flowchart, step-by-step)
Record data
Maintain test logs
Compile cumulative reference/record

Competency: **Demonstrate proficiency in technical report writing**

Competency Builders:

Use data books and cross reference/technical manuals
Identify type of report needed
Compile relevant data
Design applicable charts and graphs
Analyze data
Draw conclusions
Outline reports
Write reports
Present reports

Unit: Basic Personal Computer Concepts

Competency: Explain use of personal computers in business

Competency Builders:

Describe the impact of computer use on individuals and businesses
Identify basic applications of computers in business
Identify automated business systems and electronic media
Identify different types and sizes of computers
Define input, processor, output, and storage units
Identify how PCs integrate with other information technologies (e.g., scanners, mainframes)
Describe impact of computer use on individuals and business
Identify basic applications of computers in business

Competency: Describe personal computer operations

Competency Builders:

Explain how data is stored in main computer memory
Explain how a computer system executes program instruction
Explain electronic storage capacity
Explain electronic units of measure and how they represent data
Identify data storage techniques
Identify types of memory
Explain different types of input and output

Competency: Explain information processing

Competency Builders:

Define operating systems
Describe the difference between data files and program files
Demonstrate knowledge of system commands
Define software types and functions
Describe basic disk operation and care
List business applications of software package
List advantages and disadvantages of integrated and dedicated software

Competency: **Demonstrate computer literacy**

Competency Builders:

Identify computer components
Identify parallel versus serial ports
Explain differences between conventional, expanded, and extended memory
Identify use of storage media
List commands that affect disk operation
Use disk operating system to format disks
Originate directories and subdirectories
Explain common configuration variables
Explain device driver concepts
Demonstrate commands that open, close, copy, delete, and rename files on disk
Keyboard document(s) using computer

Unit: Packaged PC Applications

Competency: Explain software applications

Competency Builders:

Describe need for application software
Describe different types of software applications
Explain advantages and disadvantages of various software applications
List software sources
Explain copyright laws for software

Competency: Explain spreadsheet packages

Competency Builders:

Define spreadsheet
Demonstrate knowledge of basic spreadsheet terminology
Define components of spreadsheets
Describe implementation of spreadsheet operations in business scope

Competency: Perform word processing functions

Competency Builders:

Define word processing terminology
Explain functions of word processing software
Explain word processing applications
Use appropriate reference materials
Keyboard efficiently by touch
Use mouse
Initialize diskette
Prepare backup file
Maintain backup file
Update spelling dictionary and spell check
Perform document functions (e.g., locate, rename, delete, save, retrieve, copy)
Perform formatting functions (e.g., set margins and tabs, center, underline, bold, cut and paste)
Use edit features
Use sort features
Add page numbers to document
Add headers and footers
Print files, pages, screens and blocks of text
Verify accuracy of output
Create a document
Save a document to disk
Retrieve a document from disk
Edit an existing document
Describe word-wrap
Print a document
Create glossary file
Store boilerplate material
Compose documents at keyboard
Tabulate multiple columns
Prepare new documents from existing ones
Merge selected copy with new information
Prepare various types of table options
Index text
Format text
Integrate database, spreadsheet and graphic files
Convert documents from one system to another
Demonstrate use of computer thesaurus
Use multimedia techniques/resources

Competency: Use spreadsheet packages

Competency Builders:

Use spell check
Execute an electronic spreadsheet
Enter data, formulas, and functions
Differentiate between labels and numbers
Compare absolute and relative addressing
Speculate using "what if..." questions
Sequence keystrokes in the creation of a macro
Create database within spreadsheet and perform data query functions
Move around in spreadsheet and correct errors
Format spreadsheet
Create graphs
Print graphs
Save previously saved files
Load previously saved files
Replicate cells using copy commands
Use electronic spreadsheet to complete business application
Use spreadsheet to plan financial strategies
Prepare spreadsheet
Use multimedia techniques/resources

Competency: Explain database packages

Competency Builders:

Define database
Explain terms used in database systems
Describe common functions of database systems

Competency: Use database packages

Competency Builders:

Use database package to create, input, edit, and display fields and records
Analyze structure of database files
Perform calculations with a database file
Alter structure of database file
Sort records based on multiple fields
Identify advanced database technology
Use appropriate reference materials
Create relational database
Enter elements into database
Proofread database
Edit database
Design report formats
Apply database management system (DBMS) commands
Print reports using data from multiple databases
Use database files with other application software
Verify accuracy of output (e.g., edit reports)
Use multimedia techniques/resources

Competency: Explain function of shared environments

Competency Builders:

List purposes of a network environment
Define electronic mail
Identify advantages and disadvantages of electronic mail
Describe impact of local and wide area networks on mail delivery

Competency: Use a shared environment

Competency Builders:

Compose electronic messages
Send electronic messages using appropriate format
List categories of electronic mail service
Transmit document using electronic mail system
Monitor electronic mail

Competency: Manage software packages

Competency Builders:

Install software packages
Upgrade software packages
Document installation of software packages
Convert data files

Competency: Perform computer business graphics

Competency Builders:

Define purpose and types of graphics
Use appropriate reference materials
Create graphics
Proofread graphics
Edit graphics
Save graphics
Retrieve graphics
Print graphics to various output devices
Verify accuracy of output
Use graphic functions to create files, input data, process data, and produce output
Use graphics files with other application software

Competency: Use graphic user interface (GUI) techniques

Competency Builders:

Explain multi tasking environment
Setup data exchange between two different applications
Setup an object link between two different applications
Explain the use of dynamic link libraries

Unit: General Office Functions

Competency: Maintain a safe working environment

Competency Builders:

Comply with company safety and health rules and regulations
Use appropriate reference materials
Use equipment correctly
Use appropriate actions during emergencies
Maintain a clean and orderly work area

Competency: Maintain work flow

Competency Builders:

Organize work
Prioritize work
Apply time-management techniques
Complete assigned tasks in a timely manner
Coordinate with team members as needed

Competency: Demonstrate positive relations with customers/clients

Competency Builders:

Identify importance of repeat customers to business
Identify customer needs and wants
Provide prompt and courteous service
Resolve customer inquiries and complaints and/or refer customer to appropriate person

Competency: Perform telephone operations

Competency Builders:

Use appropriate reference materials
Display telephone etiquette
Operate equipment
Route calls
Listen assertively
Verify information
Screen calls
Record messages
Relay messages timely
Place calls
Log long-distance calls
Create telephone directories
Maintain telephone directories
Organize teleconferences
Use voice mail/messaging systems

Competency: Use facsimile machine

Competency Builders:

Explain how a facsimile machine operates
Record information regarding material being sent
Operate facsimile
Verify to sender that process has been completed
File copy of facsimile order
Maintain supplies for facsimile use
Log maintenance needs regarding facsimile

Competency: Assist visitors

Competency Builders:

Greet visitors
Screen visitors
Maintain visitor log
Make appropriate introductions
Portray professional image

Competency: Perform scheduling functions

Competency Builders:

Create calendar/schedule
Maintain appointment calendars
Process requests for appointments
Verify appointments

Competency: Use job-related reference materials

Competency Builders:

Identify reference materials
Assemble reference materials
Abstract information from reference materials
Compile data

Competency: Coordinate meeting arrangements

Competency Builders:

Make arrangements with meeting planners
Distribute agenda
Assemble relevant information
Notify participants
Confirm arrangements

Competency: Generate minutes

Competency Builders:

Record appropriate notes
Gather materials
Prepare minutes
Distribute minutes
File minutes

Competency: Coordinate travel plans

Competency Builders:

Check travel resources
Inquire about traveler's preferences
Arrange necessary transportation and lodging
Obtain passports and/or visas
Confirm arrangements
Prepare itineraries
Distribute itineraries
Alter arrangements

Competency: Perform mail functions

Competency Builders:

Identify various mail and delivery services
Process incoming mail
Distribute mail
Operate equipment
Process outgoing mail

Competency: Maintain office supplies

Competency Builders:

Prepare cost justification for purchasing supplies
Order supplies
Verify supply order against supplies
Store and secure supplies
Distribute supplies
Inventory supplies
Prepare inventory reports

Competency: Perform copying functions

Competency Builders:

Use appropriate reference materials
Operate equipment
Collate documents
Maintain equipment
Identify copying methods
Identify best copying method for task
Identify characteristics of paper stock
Keep appropriate records
Identify appropriate copyright applications

Competency: Maintain filing system

Competency Builders:

Give reasons for keeping records
Identify types of records needed
Develop proper techniques/procedures for maintaining records
Use appropriate reference materials
Describe procedure for initial inventory of records
Organize files
Index files
File information
Retrieve information
Consolidate files
Archive or destroy files
Secure files for legality and confidentiality
Follow retention schedule
Create new files
Update files
Prepare materials for filing
Sort documents
Apply cross-referencing and logging systems
Store documents
Locate documents

Competency: **Maintain hardware and software**

Competency Builders:

Use appropriate reference materials
Evaluate hardware and software
Recommend hardware and software
Schedule routine hardware maintenance
Update software
Report malfunction(s)
Maintain usage logs
Inventory hardware and software

Unit: Office Technology

Competency: Use telecommunications

Competency Builders:

Define the role of telecommunications in business
Use appropriate reference materials
Operate telephone systems
Operate fax machines

Competency: Perform basic word processing functions

Competency Builders:

Create glossary file
Store boilerplate material
Compose documents at keyboard
Tabulate multiple columns
Prepare new documents from existing ones
Merge selected copy with new information
Prepare various types of table options
Index text
Format text
Integrate database, spreadsheet, and graphics files
Convert documents from one system to another
Demonstrate use of computer thesaurus

Competency: Perform transcription functions

Competency Builders:

Identify various types of dictation/transcription equipment
Keyboard documents
Proofread documents
Edit documents
Save documents
Retrieve documents
Print documents

Competency: Use computerized filing system

Competency Builders:

Identify uses for electronic filing system
List advantages and disadvantages of electronic filing
Retrieve information from filing system
Store records electronically
Duplicate records electronically
Transmit records electronically
Maintain financial records

Competency: Perform database functions

Competency Builders:

Identify advanced database technology
Use appropriate reference materials
Create relational database
Enter elements into database
Proofread database
Edit database
Design report formats
Apply database management system (DBMS) commands
Print reports using data from multiple databases
Use database files with other application software
Verify accuracy of output

Competency: Perform desktop publishing functions

Competency Builders:

Define desktop publishing
Explain word processing functions in desktop publishing
Use appropriate reference materials
Use desktop publishing terms
Use desktop publishing software
Use graphic design and layout functions of desktop publishing
Design publications
Merge word-processing, graphics, database, and spreadsheet files
Proofread documents
Edit documents
Save documents
Retrieve documents
Print documents using various output devices

Competency: Perform computer business graphics

Competency Builders:

Define purpose and types of graphics
Use appropriate reference materials
Create graphics
Proofread graphics
Edit graphics
Save graphics
Retrieve graphics
Print graphics to various output devices
Verify accuracy of output
Use graphic functions to create files, input data, process data, and produce output
Use graphics files with other application software

Unit: General Accounting Functions

Competency: Apply arithmetical accounting skills

Competency Builders:

Compute cash discounts for various terms
Compute trade discounts
Compute extension, sales tax, and totals of sales slips
Compute markups and markdowns
Calculate rates of trade and cash discounts
Calculate unit prices given quantity prices
Calculate costs of portions of units
Solve problems involving fractions, decimals, and percentages
Solve commission problems
Solve finance-charge problems
Solve annual percentage rate problems

Competency: Apply accounting principles

Competency Builders:

Define accounting terminology
Define journals and ledgers
Identify basic accounting principles
Identify basic accounting applications
Identify computer accounting applications
Identify financial control procedures
Explain increases and decreases in accounts
Explain periodic reporting procedures
Prepare income statement
Prepare balance sheet columns
Prepare cash flow statement
Interpret balance sheets
Interpret income statements
Interpret cash-flow analysis statements

Competency: Perform manual accounting functions

Competency Builders:

Explain use of record keeping in relation to business and economic applications
Use appropriate reference materials
Analyze transactions
Use "T" accounts to label increases, decreases, and balances
Record transactions
Process receivables
Monitor expense accounts
Process payables
Prepare budgets
Process purchases
Prepare comparative (actual vs. budget) income statement

Competency: Perform automated accounting functions

Competency Builders:

Use appropriate reference materials
Operate equipment
Key data on numeric keyboard
Import or download data from computer records
Scan data from various media
Use integrated software package for simulation of accounting cycle
Set up chart of accounts for general ledger
Set up accounts payable and accounts receivable ledgers
Add accounts to general and subsidiary ledgers
Input account balances
Enter journal transactions
Process journal transaction
Prepare trial balance
Verify data and correct errors
Generate reports
Proofread accounting records and statements
Edit accounting records and statements
Save accounting records and statements
Retrieve accounting records and statements
Print accounting records and statements

Competency: Perform spreadsheet functions

Competency Builders:

Explain computer spreadsheet analysis
Use appropriate reference materials
Operate equipment
Create or format spreadsheet
Enter formulas
Move cells and ranges
Enter data on spreadsheet
Import or download data to spreadsheet
Apply data sort, data query, data fill, and data distribution
Export spreadsheet files to word processing, graphics and database files
Import spreadsheet files to word processing, graphics and database files
Proofread spreadsheet data
Edit spreadsheet data
Verify accuracy of output
Save spreadsheet
Retrieve spreadsheet
Print spreadsheet
Use spreadsheet functions to create files, input data, process data, and produce output
Use spreadsheet files with other application software

Competency: Perform payroll functions

Competency Builders:

Use appropriate reference materials
Collect payroll data
Process payroll
Comply with company policies and procedures
Comply with government and legal requirements
Maintain records and forms
Monitor personnel costs

Competency: Perform banking functions

Competency Builders:

Use appropriate reference materials
Prepare checks, deposit slips, and withdrawal slips
Maintain checkbook
Balance checkbook
Maintain petty cash
Balance petty cash
Explain automated banking transactions
Prepare banking records
Maintain banking records

Competency: Process cost accounting information

Competency Builders:

Define cost accounting, direct materials, direct labor and overhead
Define cost allocation methods
Identify source documents
Compute direct materials by job or process
Compute direct labor by job or process
Compute overhead rates to apply to jobs or processes
Compute cost of goods produced
Compute cost of goods sold
Journalize cost of goods produced and sold entries
Post cost of goods produced and sold entries
Compute cost of inventories
Prepare cost production reports
Prepare related records of job or process costs

Competency: **Process end-of-fiscal-period information**

Competency Builders:

Prepare worksheet
Prepare trial balance
Foot ledger accounts and compute balances
Prove equality of debits and credits
Locate errors
Record adjustments
Make appropriate extensions
Journalize basic adjusting, closing, and reversing entries
Post basic adjusting, closing, and reversing entries
Prepare basic income statement
Prepare basic balance sheet
Prepare basic cash flow statement

Unit: Specialized Accounting Functions

Competency: Process purchase orders

Competency Builders:

Identify source documents
Verify purchase requisitions
Prepare purchase orders and related documents/records
Prepare receiving reports

Competency: Process purchase invoices

Competency Builders:

Verify invoices against purchase orders and receiving reports
Check invoice calculations
Journalize purchase invoice entries
Post purchase invoice entries

Competency: Process purchase returns and allowances

Competency Builders:

Verify return of goods
Issue debit memorandums
Journalize purchase returns and allowance entries
Post purchase return and allowance entries

Competency: Process accounts payable

Competency Builders:

Identify source documents
Journalize payable entries
Post payable entries
Maintain subsidiary records
Reconcile subsidiary records to accounts payable
Prepare schedule of accounts payable

Competency: Process purchase payables and payments

Competency Builders:

Verify invoices, vouchers, and/or interoffice memorandums for payment
Identify purchase discounts
Prepare checks or electronic transfers
Mark source documents paid
Journalize payment entries
Post payment entries
Adjust subsidiary records

Competency: Process notes and interest payable

Competency Builders:

Identify source documents
Identify appropriate entries for notes payable
Compute payment of notes payable and interest
Record payment of notes payable and interest
Journalize note payables entries
Post note payables entries

Competency: Process invoices and receivables

Competency Builders:

Identify source documents
Verify sales invoices
Journalize sales invoice entries
Post sales invoice entries
Maintain subsidiary records

Competency: Process sales returns and allowances

Competency Builders:

Verify sales returns and allowances
Prepare credit memorandums
Journalize sales returns and allowance entries
Post sales return and allowance entries
Adjust subsidiary records

Competency: Process uncollectible accounts

Competency Builders:

Prepare schedule of aged accounts receivable
Apply company policies and procedures to determine uncollectibles
Prepare related documents
Journalize uncollectible account entries
Post uncollectible account entries
Adjust subsidiary records

Competency: Process collections

Competency Builders:

Identify due dates for various discount terms
Compare receipts with amount due
Verify checks, money orders, credit card receipts, and cash
Prepare cash proofs
Prepare deposits
Verify sales discounts
Prepare related documents
Journalize receipt entries
Post receipt entries
Adjust subsidiary records

Competency: Process notes and interest receivables

Competency Builders:

Identify source documents
Identify appropriate entries for notes receivable
Compute and record principal and interest of notes receivable entries
Journalize notes receivable entries
Post notes receivable entries

Competency: Perform checking account functions

Competency Builders:

Issue checks
Keep check records
Journalize entries
Post entries
Reconcile bank statement
File checks and deposit slips

Competency: Maintain petty cash fund

Competency Builders:

Set up petty cash fund
Pay petty cash vouchers
Reconcile petty cash fund
Replenish petty cash fund
Journalize petty cash transaction entries
Post petty cash transaction entries

Competency: Process employee payroll records

Competency Builders:

Obtain required employee forms
Set up employee payroll records
Update employee earnings records
Update employee benefits records
Prepare payroll distribution forms
Process employee time information

Competency: Process payroll

Competency Builders:

Calculate regular and overtime hours
Compute gross earnings
Compute deductions
Compute net pay
Prepare voucher checks
Prepare payroll checks
Journalize payroll entries
Post payroll and deduction entries

Competency: Process employer payroll taxes

Competency Builders:

Apply payroll laws and regulations
Prepare required tax deposits/payments
Prepare payroll tax returns as required
Prepare employee tax forms and reports as required
Journalize employer's payroll tax entries
Post employer's payroll tax entries
Post recorded liability for payroll tax entries
Post withholding and payroll taxes

Competency: Process accruals and deferrals

Competency Builders:

Define accruals and deferrals
Calculate amounts to be accrued and deferred
Journalize accrued and deferred liability and revenue entries
Post accrued and deferred liability and revenue entries
Journalize reversing entries as required
Post reversing entries

Competency: **Use financial statements to make business decisions**

Competency Builders:

Prepare balance sheet
Prepare income statement
Prepare cash-flow analysis
Prepare break-even analysis
Prepare budgets
Prepare comparative financial statement
Prepare cost and revenue analysis
Interpret financial statements
Make financial recommendations

Competency: **Update value of plant and equipment assets**

Competency Builders:

Differentiate between revenue and capital expenditures
Define depreciation methods
Calculate depreciation
Journalize plant and equipment asset entries
Post plant and equipment asset entries
Journalize depreciation entries
Post depreciation entries
Record disposition of plant assets by selling, discarding, and trading
Post disposal of plant and equipment asset entries

Unit: Business Law

Competency: Explain legal rights and responsibilities

Competency Builders:

Describe different types of laws
Identify rules of law affecting minors
Describe differences between crimes and torts
Describe court system and how a case goes to trail

Competency: Demonstrate knowledge of labor law

Competency Builders:

Describe rights and responsibilities of parties to an employment contract
Identify state and federal laws dealing with employment
Identify protections available to employees

Competency: Demonstrate knowledge of environmental law

Competency Builders:

Describe EPA regulations
Identify environmental regulation agencies (e.g., EPA, OSHA, TASA, RCRA, DOT)
Use reference applicable materials
Explain reporting procedures for violations to appropriate agencies
Identify reporting procedures and forms used
Identify industrial hygiene law and regulations (e.g., NIOSH)

Competency: Demonstrate knowledge of contract law

Competency Builders:

Analyze elements of a contract
Differentiate between contracts that are transferable and contracts that are not transferable
Identify means of discharging contracts
Describe means of discharging contracts
Describe remedies available for a breach of contract

Competency: Demonstrate knowledge of corporation law

Competency Builders:

Explain the different types of business structures (e.g., sole proprietorship, general partnership, limited partnership, corporation including subchapter S)
Describe how to form a corporation
Describe the difference between equity and debt securities
Identify the principle/agent relationship and the basic terms of employment agreements
Identify special forms of corporations
Name corporation purpose and structure

Competency: Demonstrate knowledge of consumer law

Competency Builders:

Describe types of negotiable instruments
Describe laws related to buying on credit
Explain negotiable instruments
Identify factors to consider when borrowing money
Describe laws that apply to the collection of negotiable instruments
Identify regulatory agencies (e.g., FDIC, FTC)
Explain retirement plans (e.g., IRAs, 401Ks)

Competency: Demonstrate knowledge of real estate law

Competency Builders:

Describe legal documents relating to residential transactions
Explain a residential real estate settlement procedure
Describe title insurance and financing documents
Identify various documents relating to the sale of commercial property
Explain a commercial real estate settlement

Competency: Demonstrate knowledge of estates, trusts and wills

Competency Builders:

Explain information needed to administer an estate
Identify legal procedure of Letters Testamentary and Letters of Administration through probate
Demonstrate other legal procedures pertinent to estates
Explain court documents commonly filed in connection with estate administration
Identify tax returns for an estate
Explain wills and inter-vivos trusts

Unit: Computer Operations

Competency: Operate computer systems

Competency Builders:

Define job, batch, and job step
Describe data requirements
Use appropriate reference materials
Perform power-up and log-on procedures
Demonstrate basic programming skills
Use console device to interact with and respond to system messages
Secure supplies and resources
Follow processing procedures for each application/job
Run application/job
Describe scheduling priority
Describe transmittal form and transmittal log
Develop an audit trail
Handle materials and equipment in a responsible manner
Use electronic data interchange (EDI)

Competency: Maintain computer systems

Competency Builders:

Monitor system status and performance
Run diagnostics
Report computer system malfunction(s)
Report software malfunction(s)
Fix recoverable problems
Maintain security
Maintain computer log
Perform backup procedure(s)
Perform preventive maintenance
Follow log-off and power-down procedure(s)
Follow equipment maintenance procedures
Follow quality control procedures
Describe operator duties and job scheduling

Competency: Maintain security requirements

Competency Builders:

Apply business ethics
Follow security rules, regulations, and codes
Implement security procedures
Document security procedures
Perform security checks

Competency: Explain operation of peripheral devices

Competency Builders:

Identify peripherals and operating requirements of each
Identify primary devices used for personal computer auxiliary storage
Describe how data is stored on diskettes and hard drives
List speed and storage capacities of computer auxiliary storage devices
Describe attributes of diskettes and hard disks regarding speed and storage capacity
List types of disk storage used with large computer systems
Define role of tape storage in relation to personal and large computers
Describe security issues
Explain purpose of input devices (e.g., keyboard, mouse, scanners, pens, bar code readers, credit/debit/smart cards, voice, video, gloves, joysticks)
Describe operation of output devices (e.g., voice, speaker output devices, printers, plotters, printer sharing units, SCSI interface, video display)
Describe operation of multimedia (e.g., video, audiosound)
Describe operation of storage devices (e.g., tape, disk, CD-ROM)

Competency: Operate peripheral devices

Competency Builders:

Use appropriate reference materials
Load media devices
Start media devices
Unload media devices
Import, edit, and export video and audio
Set up print devices
Operate scanner devices
Operate print devices
Maintain print devices
Monitor peripheral equipment operations
Perform routine maintenance on peripheral devices
List appropriate control procedures
Demonstrate output processing, bursting, decollating, splitting, and shredding
Transmit via modem
Receive via modem
Search a CD-ROM library
Print information from a CD-ROM library
Describe device driver

Competency: Store media

Competency Builders:

Identify need for data library
Use appropriate reference materials
Retrieve stored media (e.g., on-line, off-line, permanent, off-site)
File stored media (e.g., on-line, off-line, permanent, off-site)
Initialize media
Catalog media
Maintain supplies
Maintain media library
Maintain backup records
Maintain company and/or government standards for media security
Maintain archives of company records required by policy or law

Competency: Maintain microcomputers

Competency Builders:

Use appropriate reference materials
Install PC
Change hardware
Set up system configuration
Install software packages
Respond to system messages
Run software applications
Back up systems
Restore systems
Report computer malfunction(s)
Report software malfunction(s)
Perform preventative maintenance

Competency: Explain operating systems

Competency Builders:

Identify operating systems and their attributes
Describe how commands handle tasks in operating systems
Describe various input/output systems
Describe the purpose of operating system utilities
Differentiate between a compiler and an interpreter
Describe the processing that occurs when an interpreter is used
Describe the processing that occurs when a compiler is used

Unit: Small Business Management

Competency: Explain entrepreneurship

Competency Builders:

Identify characteristics of entrepreneurs
Identify qualities and skills needed by business owners
Identify means of obtaining technical assistance
Identify advantages and disadvantages of owning a small business
Identify personal risks of owning a small business
Describe basic factors contributing to business success
Describe a franchise-dealer relationship

Competency: Evaluate entrepreneurship as a personal goal

Competency Builders:

Evaluate personal interests and resources (e.g., time, energy, skills)
Compare personal interests and skills with those necessary for entrepreneurship
Assess aptitude to become a successful entrepreneur
Identify motives for becoming an entrepreneur

Competency: Develop a business plan

Competency Builders:

List sources of information for starting a business
Classify local and state requirements for starting business
Identify risks of creating a new business
Differentiate among market characteristics
Analyze financing of business ownership
Develop marketing strategies

Competency: Identify role of small business in the economy

Competency Builders:

Identify factors that contribute to the success and failure of small business
Describe effects of supply, demand, profit, and competition on small business
Explain relationship of small business to a national (USA) and global economy

Competency: Analyze how legislation affects small business

Competency Builders:

Identify legal issues faced by entrepreneurs
Describe the relationship between government and entrepreneurs
Explain the effects of regulation on the business operation
Identify when and how to obtain appropriate legal assistance
Participate in the legislative process

Competency: Evaluate factors affecting small business management

Competency Builders:

Identify advantages and disadvantage of various types of ownership
Identify cooperative arrangements
Describe legal forms of retail businesses
Differentiate between various types of insurable business risks
Describe social and ethical problems that affect business
Classify types of government regulations that affect business
Analyze current trends in business
List costs that must be considered when starting a business
Select best location and layout for a business

Competency: Identify marketing mix

Competency Builders:

Explain importance of having the right product
Explain importance of having the product at the right place
Explain importance of having the product with the right promotion
Explain importance of having the product at the right price
Explain importance of having the product at the right time

Competency: Promote products and/or services

Competency Builders:

Explain selling function
Explain promotion function
Describe relationship of sales to promotion
Describe how to plan for special events and public relations activities
Explain importance of maintaining a check on competitors' promotions
Identify factors used to select appropriate products
Prepare merchandise/buying plan
Maintain vendor information and select appropriate vendors
Identify selling price
Keep abreast of merchandising trends

Competency: Manage customer relations

Competency Builders:
Identify advantages of customer services and accommodations
Identify advantages of attractive, comfortable facilities
Explain importance of price, quality, and variety
Use acceptable techniques in handling customer complaints

Competency: Minimize internal theft

Competency Builders:

Establish internal theft policy
Identify types of internal loss
Identify potential loss situations
Report employee theft
Follow company policies regarding internal theft
Follow security procedures

Competency: Explain financing methodologies

Competency Builders:

Explain leasing
Explain stock ownership
Explain bond ownership
Explain convertible securities
Explain bank loans

Competency: Identify costs of financial services

Competency Builders:

Classify revenue and expenses
Speculate on revenue sources and expenses
Identify start-up costs
Explain means of obtaining financial assistance
Explain importance of a sound credit rating
Outline long-range financial plans
Explain how sources of finance are used in business operations
Compare financial services available from financial institutions

Competency: Prepare financial records and reports

Competency Builders:

Record receipts and payments
Adjust cash flow upon the introduction of a variable
Justify budget items
Record income and expenditures
Report employee records for audit and taxation purposes

Competency: Explain management's role in operating a business

Competency Builders:

Explain importance of organizational skills
Identify management functions performed by entrepreneurs
Describe responsibilities and rewards of small business management
Compare specific management techniques
Explain importance of time management
Identify benefits of membership in professional/trade associations
Identify professional support system(s)
Explain need for basic accounting skills
Identify free sources of information and support
Explain importance of fundamental marketing skills
Describe benefits of continuous employee training

Competency: Practice safety precautions

Competency Builders:

Maintain safe work area
Operate equipment safely
Practice safety to prevent accidents
Follow procedures for reporting accidents
Follow safety procedures for special populations
Follow government regulations (e.g., OSHA, EPA)
Follow sanitation and hygiene procedures
Report emergencies to proper authorities
Identify emergency evacuation plans
Operate fire and safety equipment

Competency: Comply with government regulations

Competency Builders:

Identify sources of information and assistance
Identify regulations, licensing, and permits affecting business operations
Identify taxes affecting small businesses
Develop policies of compliance
Develop basic first aid skills
Monitor changing regulations

Competency: Perform management activities

Competency Builders:

Define management
Describe basic principles of good management
Identify effective leadership traits
Develop management objectives
Explain role of management in operating a business
Identify purposes of forecasting
Identify purpose of selecting appropriate marketing strategies
Develop short-term and long-term action plans
Describe importance of performance measurements and record keeping
Explain importance of keeping informed of developments and trends affecting business
Explain importance of planning for emergencies
Prepare managerial reports about production, personnel, equipment, and operational costs
Identify elements of a general budget
Describe use of credit by a business
Identify accounting statements that provide business information
Develop short/long range plans including Equal Access/Equal Opportunity (EAEO) guidelines
Develop procedures for handling employee complaints
Evaluate job applicants
Recommend employees for promotion
Identify contract laws
Describe the effects of insurance
Describe risk management alternatives (e.g., fire, theft, liability)
Describe consumer credit plans
Describe procedures for collection of accounts
Explain inventory control systems
Explain need for an equipment maintenance plan
Explain need for a facility maintenance plan

Unit: Supervision

Competency: **Manage human resources**

Competency Builders:

Apply appropriate management and leadership styles
Use foresight to anticipate and manage change
Display managerial and supervisory skills
Apply human relations skills
Develop management objectives
Create and/or implement organizational charts
Clarify company policies and procedures
Maintain office procedures manual(s)
Establish office procedures
Prepare and/or monitor budgets
Prepare managerial reports
Analyze production reports
Maintain appropriate work environment
Conduct tours
Monitor progress
Prepare and communicate productivity reports
Provide and/or coordinate training for new policies
Troubleshoot office problems
Communicate performance expectations
Counsel employees about career objectives
Maintain performance records
Adhere to company policies regarding discrimination and harassment
Address employees regarding disciplinary action(s)
Recommend employees for promotion
Explain procedure for handling grievances
Evaluate employee performance
Document personnel issues

Competency: Manage projects

Competency Builders:

Conduct needs analysis
Set priorities
Research information
Develop goals and objectives
Develop strategic plan
Develop project budget
Apply forecasting techniques
Apply prioritizing techniques
Schedule work assignments
Collect data
Analyze data
Act on data
Monitor project progress
Meet project timelines
Monitor budget
Apply quality measures and counter measures

Competency: Manage work flow

Competency Builders:

Plan office layout for workflow
Create organizational charts
Communicate operating policies and procedures
Maintain office procedures manual(s)
Identify production standards
Interface with other departments
Prioritize work
Assign work
Delegate work
Provide instruction
Monitor progress
Complete productivity and/or managerial reports
Complete assigned tasks in a timely manner
Coordinate with team members

Competency: Conduct staff/team meetings

Competency Builders:

Plan meeting
Set agenda
Set and schedule meeting
Schedule meeting room
Invite appropriate personnel
Identify need for outside speakers
Assign someone to take minutes
Make introductions
Invite questions and comments, and group participation
Focus on agenda items, but maintain issues list as they arise
Decide appropriate action, time frame, and accountability to tasks
Monitor time
Close meeting on time
Publish minutes in timely manner to appropriate persons

Competency: Conduct training

Competency Builders:

Secure training resources, materials, and equipment
Assess training needs
Train employees
Evaluate progress
Provide appropriate feedback
Document training participation

Office Management Specialist

NOTE: Each TCP should respond to labor market demands in your area. Therefore, the following pages should be examined before being selected for use in TCP Part I (See "The TCP Process" Tab). For example, some units may not apply to your situation, nor might all the competencies within each unit be appropriate. Also, note that several units appear within each of the twelve occupations in this binder. Those "common" units should only appear once in the draft competency list for TCP Part I if you are compiling several occupations in a cluster format (See "TCP Matrix" Tab).

Units to Consider:	Page
Employability Skills	OM-3
Professionalism	OM-8
Teamwork	OM-12
Professional and Ethical Standards	OM-14
Economic and Business Principles	OM-16
Customer Relations	OM-20
Problem Analysis	OM-21
Project Management	OM-22
Technical Documentation	OM-23
Basic Personal Computer Concepts	OM-24
Packaged PC Applications	OM-26
General Office Functions	OM-31
Office Technology	OM-37
General Accounting Functions	OM-40
Computer Operations	OM-45
Operating Systems	OM-49
Small Business Management	OM-53
Supervision	OM-59

DON'T FORGET TO INSERT YOUR ACADEMIC COMPETENCIES HERE

Communications Literacy, Mathematics Literacy, Science Literacy, and Technology Literacy have been removed so that you may insert your own academic lists here.

COMMUNICATIONS LITERACY

(e.g., Reading, Writing, Speaking, and Listening)

MATHEMATICS LITERACY

(e.g., Algebra, Geometry, Trigonometry, Calculus)

SCIENCE LITERACY

(e.g., Physical Science, Environmental Science, Agriscience, Biology, Chemistry, Physics, Anatomy & Physiology)

TECHNOLOGY LITERACY

(i.e., the impact of technology on humans and their home, work, and play environments)

Unit: Employability Skills

Competency: Develop a career plan

Competency Builders:

Identify current interests and aptitudes
Identify common barriers to employment
Describe strategies to overcome employment barriers
Locate resources for finding employment
Research job trends
Identify career options
Identify advantages and disadvantages of career options (in addition to other than monetary)
Identify job requirements
Investigate education/training opportunities
Evaluate personal strengths and weaknesses

Competency: Prepare for employment

Competency Builders:

Identify traditional and non-traditional employment sources
Identify present and future employment opportunities (by geographic location)
Research job opportunities, including non-traditional careers
Compare salary ranges and benefit packages
Compile occupational profile
Identify rights and responsibilities of equal employment opportunity laws
Design resume and cover letter
Target resume
Secure references
Investigate generic and specific employment tests (e.g., civil service exam; drug screening)
Use follow-up techniques to enhance employment potential
Demonstrate legible written communication skills using correct grammar, spelling, punctuation, and concise wording
Describe methods for handling illegal questions on job application forms and during interviews
Write letter of application
Research prospective employer and services performed
Explain critical importance of personal appearance, hygiene, and demeanor
Interpret job description
Demonstrate appropriate interview question and answer techniques
Demonstrate methods for handling difficult interview questions
Evaluate job offers
Write letter of acceptance
Write letter of declination
Demonstrate good listening skills
Ask for the job tactfully
Participate in extracurricular activities (e.g., student government, community projects,)

Competency: Evaluate the importance of self-esteem as an employability skill

Competency Builders:

Identify factors that affect self-esteem
Compare effects of low self-esteem and high self-esteem
Identify strategies to promote positive self-esteem

Competency: Demonstrate job retention skills

Competency Builders:

Identify employer expectations regarding job performance, work habits, attitudes, personal appearance, and hygiene
Exhibit appropriate work habits and attitude
Demonstrate ability to set priorities
Identify behaviors to establish successful working relationships
Identify alternatives for dealing with harassment, bias, and discrimination based on race, color, national origin, sex, religion, handicap, or age
Identify opportunities for advancement
List reasons for termination
List consequences of being absent frequently from job
List consequences of frequently arriving late for work
Demonstrate interpersonal relations skills (i.e., verbal and written)
Demonstrate negotiation skills
Demonstrate teamwork
Follow chain-of-command
Exhibit appropriate job dedication

Competency: Demonstrate knowledge of work ethic

Competency Builders:

Define work ethic
Identify factors that influence work ethic
Differentiate law and ethics
Describe how personal values are reflected in work ethic
Describe how interactions in the workplace affect personal work ethic
Describe how life changes affect personal work ethic

Competency: Exhibit appropriate work ethic

Competency Builders:

Use time-management techniques
Avoid personal activity during work hours
Attend work as scheduled
Adhere to company and/or governmental policies, procedures, rules, and regulations
Exercise confidentiality
Demonstrate appropriate human relations skills
Adhere to rules of conduct
Accept constructive criticism
Offer constructive criticism
Take pride in work
Resolve conflict
Manage stress
Avoid sexual connotations and harassment
Adjust to changes in the workplace
Demonstrate punctuality
Assume responsibility for personal decisions and actions
Take responsibility for assignments
Follow chain-of-command

Competency: Apply decision-making techniques

Competency Builders:

Identify decision to be made
Identify ownership of decision to be made
Identify possible alternatives and their consequences
Make decisions based on facts, legality, ethics, goals, and/or culture
Apply time factor(s)
Present decision to be implemented
Evaluate decision made
Take responsibility for decision

Competency: Apply problem-solving techniques

Competency Builders:

Identify problem
Select appropriate problem solving tools/techniques
Identify root problem cause(s)
Track root problem cause(s)
Identify possible solutions and their consequences (e.g., long term, short term, crisis)
Use resources to explore possible solutions to problem
Contrast advantages and disadvantages of each solution
Identify appropriate action
Evaluate results
Identify post-preventive action

Competency: Exhibit characteristics for job advancement

Competency Builders:

Display positive attitude
Demonstrate knowledge of position
Perform quality work
Adapt to changing situations and technology
Demonstrate capability/responsibility for different positions
Identify characteristics of effective leaders
Identify opportunities for leadership in work place/community
Demonstrate initiative to affect change in workplace
Participate in continuing education/training program
Responds appropriately to criticism from employer, supervisor, or other employees
Exhibit awareness of corporate culture
Prepare for job setbacks
Exhibit continual growth based on performance evaluation
Set realistic goals

Unit: Professionalism

Competency: Project professional image

Competency Builders:

Define professionalism
Exhibit professional appearance
Exhibit professional manners
Project professional attitude
Identify individuals' vital role in organization
Exhibit proper etiquette in professionally-related situations

Competency: Achieve individual and professional goals

Competency Builders:

Set flexible, realistic, and measurable goals
Identify potential barriers to achieving goals
Identify strategies for addressing barriers to goal achievement
Breakdown long-term goals into short-term goals
Prioritize goals
Commit to goals
Adjust goals
Obtain support for goals
Reward goal achievement

Competency: Manage personal finances

Competency Builders:

Explain need for personal management records
Balance checkbook
Identify tax obligations
Analyze how credit affects financial security
Compare types and methods of investments
Compare types and methods of borrowing
Compare types and methods of insurance
Compare types of retirement options/plans
Identify discriminatory vs. non-discriminatory expenditures

Competency: Support community well-being

Competency Builders:

Identify environmental, educational, and social issues
Participate in social and/or community activities

Competency: Achieve organizational goals

Competency Builders:

Evaluate personal goals in relation to organizational goals
Monitor progress by evaluating feedback
List responsibilities in relation to organization goals
Accomplish assigned tasks
Exercise responsibility in relation to organizational goals
Set appropriate personal performance standards
Communicate goals with supervisor and peers
Demonstrate knowledge of products and services
Promote organizational image and mission

Competency: Demonstrate positive relations in the workplace

Competency Builders:

Identify personality types of self and other
Identify various management styles
Support employer expectations
Support employer decisions
Accept constructive criticism
Give constructive feedback
Adapt to changes in workplace
List factors to consider before resigning
Write letter of resignation

Competency: **Manage stressful situations**

Competency Builders:

Accept stress as part of daily life
Identify personal and professional factors contributing to stress
Describe physical and emotional responses to stress
Evaluate positive and negative effects of stress on productivity
Identify strategies for reducing stress
Implement strategies to manage stress
Create strategies for developing and maintaining support systems

Competency: **Analyze effects of family on work and work on family**

Competency Builders:

Identify how family values, goals, and priorities are reflected in work place
Identify responsibilities and rewards associated with paid and non-paid work
Identify responsibilities and rewards associated with families
Explain how family responsibilities can conflict with work
Explain how work can conflict with family responsibilities
Explain how work-related stress can affect families
Explain how family-related stress can affect work
Identify family support systems and resources
Identify work-related support systems and resources
Communicate with family regarding work

Competency: **Apply lifelong learning skills**

Competency Builders:

Define lifelong learning
Identify factors that cause need for lifelong learning
Analyze effects of change
Identify reasons why goals change
Describe importance of flexibility and adaptability
Evaluate need for continuing education/training

Competency: Manage professional development

Competency Builders:

Identify career opportunities
Modify career plan
Participate in continuing education/training opportunities
Document continuing education/training
Read profession-related manuals, technical journals, and periodicals
Attend meetings, workshops, seminars, conferences, and demonstrations
Participate in professional organizations
Build personal/professional mentor relationship
Build personal/professional support system
Build professional network
Strengthen communication skills
Strengthen leadership skills
Strengthen management skills

Unit: Teamwork

Competency: Demonstrate knowledge of teamwork

Competency Builders:

Define empowerment
Differentiate work groups and teams
Identify conditions essential to teamwork (e.g., brainstorming)
Explain influence of culture (e.g., corporate, community) on teamwork
Identify appropriate situations for using teams
Define team structures (e.g., cross functional, quality improvement, task force, quality circles)
Identify team building concepts
Describe characteristics and dynamics of teams
Identify characteristics of effective team leaders and members
Identify responsibilities of a valuable team member
Identify methods of involving each member of a team
Explain how individuals from various backgrounds contribute to work-related situations (e.g., technical training, cultural heritage)
Explain the purpose of facilitators
Define consensus
Define reward/recognition system

Competency: Demonstrate teamwork

Competency Builders:

Identify purpose of team and intended goal (include time frames)
Structure team around purpose
Define responsibilities of team members
Contribute to efficiency and success of team
Work toward individual and team milestones
Analyze results of team project
Facilitate a team meeting
Assist team member(s) with problem
Monitor time frame
Stress continuous improvement
Accept failure as part of learning

Competency: Use teamwork to solve problems

Competency Builders:

Identify appropriate situations for using teams
Use problem-solving process in a team setting
Identify quality management processes/techniques
Identify quality assurance processes/techniques
Prepare presentation

Competency: Conduct team meetings

Competency Builders:

Plan agenda
Schedule meeting and location
Invite appropriate personnel
Solicit outside speakers as needed
Assign someone to take minutes
Facilitate introductions
Invite questions and comments and group participation
Focus team on agenda items
Assign appropriate action, time frame and accountability to tasks
Monitor time
Close meeting on time
Publish minutes in timely manner
Set ground rules
Avoid placing individual agendas above the group's agenda

Unit: Professional and Ethical Standards

Competency: Explain professional responsibilities

Competency Builders:

Explain the need for professional and ethical standards
Explain responsibility of the individual to apply ethical standards
Identify responsibility to client(s) or employer(s)
Explain employer's consequences of unprofessional and/or unethical employee behavior
Identify responsibility to self (e.g., professional appearance and limitations) and to profession
Explain importance of conflict resolution in the workplace

Competency: Describe self-managed employees

Competency Builders:

Explain the need for organizing tasks
Explain management-by-objectives
Explain importance of planning, both long-term and short-term
Explain importance of evaluating progress
Explain importance of reporting progress
Explain time management
Explain the benefit of creative brainstorming and innovative thinking

Competency: Describe intellectual property

Competency Builders:

Explain legal ownership of proprietary assets produced by the computing professional
Explain public policy
Explain rights of the originator
Explain rights of the public
Explain patent
Explain copyright
Explain licenses
Explain confidentiality

Competency: **Apply professional and ethical standards**

Competency Builders:

Identify computing industry's standards
Describe computing industry's code of ethics
Explain various ethics established by computing societies
Apply various ethics established by computing societies

Unit: Economic and Business Principles

Competency: Describe basic economic concepts

Competency Builders:

Identify importance of economic resources
Explain concept of economic resources
Explain importance of economic resources
Explain concept of economic goods and services
Differentiate between economic goods and services
Differentiate between needs and wants
Explain concept of supply and demand
Explain concept of price
Explain how supply, demand, and price are related
Explain concept of private enterprise and business ownership
Explain concept of profit
Explain concept of risk
Explain concept of competition
Explain relationship among risk, competition, and profit

Competency: Conduct training

Competency Builders:

Secure training resources, materials, and equipment
Assess training needs
Train employees
Evaluate progress
Provide appropriate feedback

Competency: Evaluate economic systems

Competency Builders:

Compare types of economic systems
Research free enterprise system
Interpret relationship between government and business
Interpret relationship between labor and management

Competency: Illustrate basic economic principles

Competency Builders:

Illustrate global economic and world market applications
Illustrate economic cycles (e.g., unemployment, recession, inflation, budget deficits)
Illustrate economic activity's affect on business (e.g., financial, competitor indicators, industry)

Competency: Analyze cost and profit influences

Competency Builders:

Identify importance of maximizing quality
Identify importance of maximizing productivity
Contrast specialized training and cross training
Contrast labor and management
Contrast government and business

Competency: Illustrate economic indicators and trends

Competency Builders:

Define gross national product and gross domestic product
Interpret impact of interest rates
Interpret impact of government spending
Interpret impact of seasonal business cycles
Interpret impact of inflation, growth, recession, and unemployment
Interpret impact of national and world events
Interpret impact of the growth of international trade

Competency: Explain basic international trade concepts

Competency Builders:

Explain nature and importance of international trade
Contrast advantages and disadvantages of marketing in international trade
Explain balance of trade concepts
Describe impact of foreign investment

Competency: Explain basic business concepts

Competency Builders:

Identify functions of business
Explain role of management
Explain role of labor
Explain concept of service as a product
Explain role of administration
Explain role of operations
Identify role of company objectives
Identify importance of ethical business practices
Identify types of ownership
Identify components of a business plan

Competency: Summarize business principles

Competency Builders:

Explain business organizations and functions
Describe business reporting and information flow
Map interface of departmental functions
Identify communication channels (e.g., formal, informal)
Explain total quality management (TQM) principles

Competency: Illustrate legal concepts

Competency Builders:

Define legal terminology
Explain business law concepts
Interpret contracts and/or legal documents
Explain relationship of laws and regulations to company contracts, policies, and procedures
Explain laws relating to working conditions, wages and hours, civil rights, social security, disability, and unemployment insurance

Competency: Explain role of marketing

Competency Builders:

Explain aspects of sound business image
Identify purposes of marketing
Identify functions of marketing
Describe effects of marketing
Explain product/service variety
Identify target markets
Define sales potential
Explain pricing strategies
Differentiate advertising campaigns
Explain advantages and disadvantages of advertising agencies
Describe sales incentive programs
Maintain marketing feedback and make appropriate changes
Identify types of marketing strategies and the advantage and disadvantage of each (e.g. phone, mail, person)
Design monitor plan

Competency: Serve customers/clients

Competency Builders:

Identify importance of customer
Identify customer services to provide
Relate to customers in timely fashion
Identify customer needs and wants
Gather complete and accurate information
Apply customer service concepts and terminology
Identify methods for addressing dissatisfied customers

Unit: Customer Relations

Competency: Demonstrate positive relations with customers

Competency Builders:

Identify importance of customers to business
Differentiate between customer needs and wants
Provide prompt and courteous service
Resolve customer inquiries and complaints and/or refer customer to appropriate person
Identify methods of addressing dissatisfied customers

Competency: Perform scheduling functions to meet customers needs

Competency Builders:

Create calendar/schedule
Maintain appointment calendars
Process requests for appointments
Verify appointments
Notify customer of changes in schedule
Manage scheduling conflicts

Unit: Problem Analysis

Competency: Appraise situations

Competency Builders:

Identify concerns
Classify concerns
Set priorities
Identify resolution process
Plan resolution

Competency: Analyze potential problems

Competency Builders:

Identify potential problems
Identify likely causes
Identify preventive actions
Identify contingent actions

Competency: Analyze actual problems

Competency Builders:

Identify deviation
Identify problem and possible causes
Test for probable causes
Verify cause

Competency: Analyze decisions

Competency Builders:

Identify objective(s)
Classify objective(s)
Identify alternatives
Evaluate alternatives
Assess risks
Make final choice

Unit: Project Management

Competency: Explain project management

Competency Builders:

Identify project purpose/goal
Identify project objectives
Identify work breakdown structure (WBS)
Identify resource requirements

Competency: Plan projects

Competency Builders:

Apply responsibility assignment matrix (RAM)
Apply Gantt or bar charts
Apply network diagrams
Apply critical path method (CPM)
Apply project education and review techniques
Apply software programs

Competency: Implement projects

Competency Builders:

Monitor project
Control project
Modify project

Competency: Evaluate projects

Competency Builders:

Analyze performance
Close-out project evaluation
Draw project management conclusions

Unit: Technical Documentation

Competency: Demonstrate proficiency in technical documentation

Competency Builders:

Identify parameters
Ask questions
Interpret specifications or drawings
Record process (e.g., flowchart, step-by-step)
Record data
Maintain test logs
Compile cumulative reference/record

Competency: Demonstrate proficiency in technical report writing

Competency Builders:

Use data books and cross reference/technical manuals
Identify type of report needed
Compile relevant data
Design applicable charts and graphs
Analyze data
Draw conclusions
Outline reports
Write reports
Present reports

Unit: Basic Personal Computer Concepts

Competency: Explain use of personal computers in business

Competency Builders:

Describe the impact of computer use on individuals and businesses
Identify basic applications of computers in business
Identify automated business systems and electronic media
Identify different types and sizes of computers
Define input, processor, output, and storage units
Identify how PCs integrate with other information technologies (e.g., scanners, mainframes)
Describe impact of computer use on individuals and business
Identify basic applications of computers in business

Competency: Describe personal computer operations

Competency Builders:

Explain how data is stored in main computer memory
Explain how a computer system executes program instruction
Explain electronic storage capacity
Explain electronic units of measure and how they represent data
Identify data storage techniques
Identify types of memory
Explain different types of input and output

Competency: Explain information processing

Competency Builders:

Define operating systems
Describe the difference between data files and program files
Demonstrate knowledge of system commands
Define software types and functions
Describe basic disk operation and care
List business applications of software package
List advantages and disadvantages of integrated and dedicated software

Competency: Demonstrate computer literacy

Competency Builders:

Identify computer components
Identify parallel versus serial ports
Explain differences between conventional, expanded, and extended memory
Identify use of storage media
List commands that affect disk operation
Use disk operating system to format disks
Originate directories and subdirectories
Explain common configuration variables
Explain device driver concepts
Demonstrate commands that open, close, copy, delete, and rename files on disk
Keyboard document(s) using computer

Unit: Packaged PC Applications

Competency: Explain software applications

Competency Builders:

Describe need for application software
Describe different types of software applications
Explain advantages and disadvantages of various software applications
List software sources
Explain copyright laws for software

Competency: Explain spreadsheet packages

Competency Builders:

Define spreadsheet
Demonstrate knowledge of basic spreadsheet terminology
Define components of spreadsheets
Describe implementation of spreadsheet operations in business scope

Competency: Perform word processing functions

Competency Builders:

Define word processing terminology
Explain functions of word processing software
Explain word processing applications
Use appropriate reference materials
Keyboard efficiently by touch
Use mouse
Initialize diskette
Prepare backup file
Maintain backup file
Update spelling dictionary and spell check
Perform document functions (e.g., locate, rename, delete, save, retrieve, copy)
Perform formatting functions (e.g., set margins and tabs, center, underline, bold, cut and paste)
Use edit features
Use sort features
Add page numbers to document
Add headers and footers
Print files, pages, screens and blocks of text
Verify accuracy of output
Create a document
Save a document to disk
Retrieve a document from disk
Edit an existing document
Describe word-wrap
Print a document
Create glossary file
Store boilerplate material
Compose documents at keyboard
Tabulate multiple columns
Prepare new documents from existing ones
Merge selected copy with new information
Prepare various types of table options
Index text
Format text
Integrate database, spreadsheet and graphic files
Convert documents from one system to another
Demonstrate use of computer thesaurus
Use multimedia techniques/resources

Competency: Use spreadsheet packages

Competency Builders:

Use spell check
Execute an electronic spreadsheet
Enter data, formulas, and functions
Differentiate between labels and numbers
Compare absolute and relative addressing
Speculate using "what if..." questions
Sequence keystrokes in the creation of a macro
Create database within spreadsheet and perform data query functions
Move around in spreadsheet and correct errors
Format spreadsheet
Create graphs
Print graphs
Save previously saved files
Load previously saved files
Replicate cells using copy commands
Use electronic spreadsheet to complete business application
Use spreadsheet to plan financial strategies
Prepare spreadsheet
Use multimedia techniques/resources

Competency: Explain database packages

Competency Builders:

Define database
Explain terms used in database systems
Describe common functions of database systems

Competency: Use database packages

Competency Builders:

Use database package to create, input, edit, and display fields and records
Analyze structure of database files
Perform calculations with a database file
Alter structure of database file
Sort records based on multiple fields
Identify advanced database technology
Use appropriate reference materials
Create relational database
Enter elements into database
Proofread database
Edit database
Design report formats
Apply database management system (DBMS) commands
Print reports using data from multiple databases
Use database files with other application software
Verify accuracy of output (e.g., edit reports)
Use multimedia techniques/resources

Competency: Explain function of shared environments

Competency Builders:

List purposes of a network environment
Define electronic mail
Identify advantages and disadvantages of electronic mail
Describe impact of local and wide area networks on mail delivery

Competency: Use a shared environment

Competency Builders:

Compose electronic messages
Send electronic messages using appropriate format
List categories of electronic mail service
Transmit document using electronic mail system
Monitor electronic mail

Competency: Manage software packages

Competency Builders:

Install software packages
Upgrade software packages
Document installation of software packages
Convert data files

Competency: Perform computer business graphics

Competency Builders:

Define purpose and types of graphics
Use appropriate reference materials
Create graphics
Proofread graphics
Edit graphics
Save graphics
Retrieve graphics
Print graphics to various output devices
Verify accuracy of output
Use graphic functions to create files, input data, process data, and produce output
Use graphics files with other application software

Competency: Use graphic user interface (GUI) techniques

Competency Builders:

Explain multi tasking environment
Setup data exchange between two different applications
Setup an object link between two different applications
Explain the use of dynamic link libraries

Unit: General Office Functions

Competency: **Maintain a safe working environment**

Competency Builders:

Comply with company safety and health rules and regulations
Use appropriate reference materials
Use equipment correctly
Use appropriate actions during emergencies
Maintain a clean and orderly work area

Competency: **Maintain work flow**

Competency Builders:

Organize work
Prioritize work
Apply time-management techniques
Complete assigned tasks in a timely manner
Coordinate with team members as needed

Competency: **Demonstrate positive relations with customers/clients**

Competency Builders:

Identify importance of repeat customers to business
Identify customer needs and wants
Provide prompt and courteous service
Resolve customer inquiries and complaints and/or refer customer to appropriate person

Competency: Perform telephone operations

Competency Builders:

Use appropriate reference materials
Display telephone etiquette
Operate equipment
Route calls
Listen assertively
Verify information
Screen calls
Record messages
Relay messages timely
Place calls
Log long-distance calls
Create telephone directories
Maintain telephone directories
Organize teleconferences
Use voice mail/messaging systems

Competency: Use facsimile machine

Competency Builders:

Explain how a facsimile machine operates
Record information regarding material being sent
Operate facsimile
Verify to sender that process has been completed
File copy of facsimile order
Maintain supplies for facsimile use
Log maintenance needs regarding facsimile

Competency: Assist visitors

Competency Builders:

Greet visitors
Screen visitors
Maintain visitor log
Make appropriate introductions
Portray professional image

Competency: Perform scheduling functions

Competency Builders:

Create calendar/schedule
Maintain appointment calendars
Process requests for appointments
Verify appointments

Competency: Use job-related reference materials

Competency Builders:

Identify reference materials
Assemble reference materials
Abstract information from reference materials
Compile data

Competency: Coordinate meeting arrangements

Competency Builders:

Make arrangements with meeting planners
Distribute agenda
Assemble relevant information
Notify participants
Confirm arrangements

Competency: Generate minutes

Competency Builders:

Record appropriate notes
Gather materials
Prepare minutes
Distribute minutes
File minutes

Competency: Coordinate travel plans

Competency Builders:

Check travel resources
Inquire about traveler's preferences
Arrange necessary transportation and lodging
Obtain passports and/or visas
Confirm arrangements
Prepare itineraries
Distribute itineraries
Alter arrangements

Competency: Perform mail functions

Competency Builders:

Identify various mail and delivery services
Process incoming mail
Distribute mail
Operate equipment
Process outgoing mail

Competency: Maintain office supplies

Competency Builders:

Prepare cost justification for purchasing supplies
Order supplies
Verify supply order against supplies
Store and secure supplies
Distribute supplies
Inventory supplies
Prepare inventory reports

Competency: Perform copying functions

Competency Builders:

Use appropriate reference materials
Operate equipment
Collate documents
Maintain equipment
Identify copying methods
Identify best copying method for task
Identify characteristics of paper stock
Keep appropriate records
Identify appropriate copyright applications

Competency: Maintain filing system

Competency Builders:

Give reasons for keeping records
Identify types of records needed
Develop proper techniques/procedures for maintaining records
Use appropriate reference materials
Describe procedure for initial inventory of records
Organize files
Index files
File information
Retrieve information
Consolidate files
Archive or destroy files
Secure files for legality and confidentiality
Follow retention schedule
Create new files
Update files
Prepare materials for filing
Sort documents
Apply cross-referencing and logging systems
Store documents
Locate documents

Competency: **Maintain hardware and software**

Competency Builders:

Use appropriate reference materials
Evaluate hardware and software
Recommend hardware and software
Schedule routine hardware maintenance
Update software
Report malfunction(s)
Maintain usage logs
Inventory hardware and software

Unit: Office Technology

Competency: Use telecommunications

Competency Builders:

Define the role of telecommunications in business
Use appropriate reference materials
Operate telephone systems
Operate fax machines

Competency: Perform basic word processing functions

Competency Builders:

Create glossary file
Store boilerplate material
Compose documents at keyboard
Tabulate multiple columns
Prepare new documents from existing ones
Merge selected copy with new information
Prepare various types of table options
Index text
Format text
Integrate database, spreadsheet, and graphics files
Convert documents from one system to another
Demonstrate use of computer thesaurus

Competency: Perform transcription functions

Competency Builders:

Identify various types of dictation/transcription equipment
Keyboard documents
Proofread documents
Edit documents
Save documents
Retrieve documents
Print documents

Competency: Use computerized filing system

Competency Builders:

Identify uses for electronic filing system
List advantages and disadvantages of electronic filing
Retrieve information from filing system
Store records electronically
Duplicate records electronically
Transmit records electronically
Maintain financial records

Competency: Perform database functions

Competency Builders:

Identify advanced database technology
Use appropriate reference materials
Create relational database
Enter elements into database
Proofread database
Edit database
Design report formats
Apply database management system (DBMS) commands
Print reports using data from multiple databases
Use database files with other application software
Verify accuracy of output

Competency: Perform desktop publishing functions

Competency Builders:

Define desktop publishing
Explain word processing functions in desktop publishing
Use appropriate reference materials
Use desktop publishing terms
Use desktop publishing software
Use graphic design and layout functions of desktop publishing
Design publications
Merge word-processing, graphics, database, and spreadsheet files
Proofread documents
Edit documents
Save documents
Retrieve documents
Print documents using various output devices

Competency: Perform computer business graphics

Competency Builders:

Define purpose and types of graphics
Use appropriate reference materials
Create graphics
Proofread graphics
Edit graphics
Save graphics
Retrieve graphics
Print graphics to various output devices
Verify accuracy of output
Use graphic functions to create files, input data, process data, and produce output
Use graphics files with other application software

Unit: General Accounting Functions

Competency: Apply arithmetical accounting skills

Competency Builders:

Compute cash discounts for various terms
Compute trade discounts
Compute extension, sales tax, and totals of sales slips
Compute markups and markdowns
Calculate rates of trade and cash discounts
Calculate unit prices given quantity prices
Calculate costs of portions of units
Solve problems involving fractions, decimals, and percentages
Solve commission problems
Solve finance-charge problems
Solve annual percentage rate problems

Competency: Apply accounting principles

Competency Builders:

Define accounting terminology
Define journals and ledgers
Identify basic accounting principles
Identify basic accounting applications
Identify computer accounting applications
Identify financial control procedures
Explain increases and decreases in accounts
Explain periodic reporting procedures
Prepare income statement
Prepare balance sheet columns
Prepare cash flow statement
Interpret balance sheets
Interpret income statements
Interpret cash-flow analysis statements

Competency: **Perform manual accounting functions**

Competency Builders:

Explain use of record keeping in relation to business and economic applications
Use appropriate reference materials
Analyze transactions
Use "T" accounts to label increases, decreases, and balances
Record transactions
Process receivables
Monitor expense accounts
Process payables
Prepare budgets
Process purchases
Prepare comparative (actual vs. budget) income statement

Competency: **Perform automated accounting functions**

Competency Builders:

Use appropriate reference materials
Operate equipment
Key data on numeric keyboard
Import or download data from computer records
Scan data from various media
Use integrated software package for simulation of accounting cycle
Set up chart of accounts for general ledger
Set up accounts payable and accounts receivable ledgers
Add accounts to general and subsidiary ledgers
Input account balances
Enter journal transactions
Process journal transaction
Prepare trial balance
Verify data and correct errors
Generate reports
Proofread accounting records and statements
Edit accounting records and statements
Save accounting records and statements
Retrieve accounting records and statements
Print accounting records and statements

Competency: Perform spreadsheet functions

Competency Builders:

Explain computer spreadsheet analysis
Use appropriate reference materials
Operate equipment
Create or format spreadsheet
Enter formulas
Move cells and ranges
Enter data on spreadsheet
Import or download data to spreadsheet
Apply data sort, data query, data fill, and data distribution
Export spreadsheet files to word processing, graphics and database files
Import spreadsheet files to word processing, graphics and database files
Proofread spreadsheet data
Edit spreadsheet data
Verify accuracy of output
Save spreadsheet
Retrieve spreadsheet
Print spreadsheet
Use spreadsheet functions to create files, input data, process data, and produce output
Use spreadsheet files with other application software

Competency: Perform payroll functions

Competency Builders:

Use appropriate reference materials
Collect payroll data
Process payroll
Comply with company policies and procedures
Comply with government and legal requirements
Maintain records and forms
Monitor personnel costs

Competency: Perform banking functions

Competency Builders:

Use appropriate reference materials
Prepare checks, deposit slips, and withdrawal slips
Maintain checkbook
Balance checkbook
Maintain petty cash
Balance petty cash
Explain automated banking transactions
Prepare banking records
Maintain banking records

Competency: Process cost accounting information

Competency Builders:

Define cost accounting, direct materials, direct labor and overhead
Define cost allocation methods
Identify source documents
Compute direct materials by job or process
Compute direct labor by job or process
Compute overhead rates to apply to jobs or processes
Compute cost of goods produced
Compute cost of goods sold
Journalize cost of goods produced and sold entries
Post cost of goods produced and sold entries
Compute cost of inventories
Prepare cost production reports
Prepare related records of job or process costs

Competency: **Process end-of-fiscal-period information**

Competency Builders:

Prepare worksheet
Prepare trial balance
Foot ledger accounts and compute balances
Prove equality of debits and credits
Locate errors
Record adjustments
Make appropriate extensions
Journalize basic adjusting, closing, and reversing entries
Post basic adjusting, closing, and reversing entries
Prepare basic income statement
Prepare basic balance sheet
Prepare basic cash flow statement

Unit: Computer Operations

Competency: Operate computer systems

Competency Builders:

Define job, batch, and job step
Describe data requirements
Use appropriate reference materials
Perform power-up and log-on procedures
Demonstrate basic programming skills
Use console device to interact with and respond to system messages
Secure supplies and resources
Follow processing procedures for each application/job
Run application/job
Describe scheduling priority
Describe transmittal form and transmittal log
Develop an audit trail
Handle materials and equipment in a responsible manner
Use electronic data interchange (EDI)

Competency: Maintain computer systems

Competency Builders:

Monitor system status and performance
Run diagnostics
Report computer system malfunction(s)
Report software malfunction(s)
Fix recoverable problems
Maintain security
Maintain computer log
Perform backup procedure(s)
Perform preventive maintenance
Follow log-off and power-down procedure(s)
Follow equipment maintenance procedures
Follow quality control procedures
Describe operator duties and job scheduling

Competency: Maintain security requirements

Competency Builders:

Apply business ethics
Follow security rules, regulations, and codes
Implement security procedures
Document security procedures
Perform security checks

Competency: Explain operation of peripheral devices

Competency Builders:

Identify peripherals and operating requirements of each
Identify primary devices used for personal computer auxiliary storage
Describe how data is stored on diskettes and hard drives
List speed and storage capacities of computer auxiliary storage devices
Describe attributes of diskettes and hard disks regarding speed and storage capacity
List types of disk storage used with large computer systems
Define role of tape storage in relation to personal and large computers
Describe security issues
Explain purpose of input devices (e.g., keyboard, mouse, scanners, pens, bar code readers, credit/debit/smart cards, voice, video, gloves, joysticks)
Describe operation of output devices (e.g., voice, speaker output devices, printers, plotters, printer sharing units, SCSI interface, video display)
Describe operation of multimedia (e.g., video, audiosound)
Describe operation of storage devices (e.g., tape, disk, CD-ROM)

Competency: Operate peripheral devices

Competency Builders:

Use appropriate reference materials
Load media devices
Start media devices
Unload media devices
Import, edit, and export video and audio
Set up print devices
Operate scanner devices
Operate print devices
Maintain print devices
Monitor peripheral equipment operations
Perform routine maintenance on peripheral devices
List appropriate control procedures
Demonstrate output processing, bursting, decollating, splitting, and shredding
Transmit via modem
Receive via modem
Search a CD-ROM library
Print information from a CD-ROM library
Describe device driver

Competency: Store media

Competency Builders:

Identify need for data library
Use appropriate reference materials
Retrieve stored media (e.g., on-line, off-line, permanent, off-site)
File stored media (e.g., on-line, off-line, permanent, off-site)
Initialize media
Catalog media
Maintain supplies
Maintain media library
Maintain backup records
Maintain company and/or government standards for media security
Maintain archives of company records required by policy or law

Competency: Maintain microcomputers

Competency Builders:

Use appropriate reference materials
Install PC
Change hardware
Set up system configuration
Install software packages
Respond to system messages
Run software applications
Back up systems
Restore systems
Report computer malfunction(s)
Report software malfunction(s)
Perform preventative maintenance

Competency: Explain operating systems

Competency Builders:

Identify operating systems and their attributes
Describe how commands handle tasks in operating systems
Describe various input/output systems
Describe the purpose of operating system utilities
Differentiate between a compiler and an interpreter
Describe the processing that occurs when an interpreter is used
Describe the processing that occurs when a compiler is used

Unit: Operating Systems

Competency: Describe operating systems

Competency Builders:

Describe microcomputer operating systems
Describe minicomputer operating systems
Describe mainframe operating systems
Describe network operating systems
Describe how commands handle tasks in operating systems
Describe various input/output systems
Describe the purpose of operating system utilities
Differentiate between a compiler and an interpreter
Describe the processing that occurs when an interpreter is used
Describe the processing that occurs when a compiler is used

Competency: Explain central processing unit (CPU) control

Competency Builders:

Explain CPU processes
Explain CPU concurrency
Explain CPU scheduling
Explain CPU multitasking
Explain CPU multiprocessing

Competency: Describe memory management

Competency Builders:

Describe functions of primary memory
Describe functions of virtual memory (e.g., paging, segmentation)
Describe functions of extended memory
Describe functions of expanded memory
Describe functions of cache memory

Competency: Explain auxiliary storage management

Competency Builders:

Explain storage management software
Identify auxiliary storage media
Describe operational characteristics of storage media
Describe storage capacities of storage media
Describe retrieval methods of storage media
Differentiate between files and directories
Differentiate among management devices (e.g., disk, tape, CD-ROM)
Explain redundant array of inexpensive disks (RAID)
Explain mirroring concepts

Competency: Store media

Competency Builders:

Identify need for data library
Use appropriate reference materials
Retrieve stored media
File stored media
Initialize media
Catalog media
Maintain supplies
Maintain media library
Maintain backup records
Maintain company and/or government standards for media security
Maintain archives of company records required by policy or law

Competency: Explain security issues

Competency Builders:

Define backup and recovery
Explain disaster planing
Define authentication (e.g., passwords, access level)
Describe encryption techniques
Describe viruses and worms
Describe vaccines
Explain operating system penetration

Competency: Maintain security requirements

Competency Builders:

Implement security procedures
Apply business ethics
Follow security rules, regulations, and codes
Document security procedures
Perform security checks

Competency: Define open system concepts

Competency Builders:

Differentiate between proprietary and open system architecture
Explain X/OPEN
Explain purpose of Open Software Foundation
Explain purpose of UNIX International
Explain purpose of Corporation for Open Systems International
Identify the OSI Model

Competency: Operate system

Competency Builders:

Review automated scheduling software
Define job, batch, and job step
Describe data requirements
Use appropriate reference materials
Perform power-up and log-on procedures
Demonstrate basic programming skills
Use console device to interact with and respond to system messages
Secure supplies and resources
Follow processing procedures for each application/job
Run application/job
Describe scheduling priority
Describe transmittal form and transmittal log
Develop an audit trail
Handle materials and equipment in a responsible manner

Competency: Maintain system

Competency Builders:

Use appropriate reference materials
Monitor system status and performance
Run diagnostics
Respond to system messages
Report computer system malfunction(s)
Report software malfunction(s)
Fix recoverable problems
Maintain security
Maintain computer log
Perform backup procedure(s)
Perform preventative maintenance procedures
Change hardware
Install software packages
Restore system
Follow log-off and power-down procedure(s)

Competency: Administer system

Competency Builders:

Manage complete system
Manage network
Manage operating system
Manage applications

Unit: Small Business Management

Competency: Explain entrepreneurship

Competency Builders:

Identify characteristics of entrepreneurs
Identify qualities and skills needed by business owners
Identify means of obtaining technical assistance
Identify advantages and disadvantages of owning a small business
Identify personal risks of owning a small business
Describe basic factors contributing to business success
Describe a franchise-dealer relationship

Competency: Evaluate entrepreneurship as a personal goal

Competency Builders:

Evaluate personal interests and resources (e.g., time, energy, skills)
Compare personal interests and skills with those necessary for entrepreneurship
Assess aptitude to become a successful entrepreneur
Identify motives for becoming an entrepreneur

Competency: Develop a business plan

Competency Builders:

List sources of information for starting a business
Classify local and state requirements for starting business
Identify risks of creating a new business
Differentiate among market characteristics
Analyze financing of business ownership
Develop marketing strategies

Competency: Identify role of small business in the economy

Competency Builders:

Identify factors that contribute to the success and failure of small business
Describe effects of supply, demand, profit, and competition on small business
Explain relationship of small business to a national (USA) and global economy

Competency: Analyze how legislation affects small business

Competency Builders:

Identify legal issues faced by entrepreneurs
Describe the relationship between government and entrepreneurs
Explain the effects of regulation on the business operation
Identify when and how to obtain appropriate legal assistance
Participate in the legislative process

Competency: Evaluate factors affecting small business management

Competency Builders:

Identify advantages and disadvantage of various types of ownership
Identify cooperative arrangements
Describe legal forms of retail businesses
Differentiate between various types of insurable business risks
Describe social and ethical problems that affect business
Classify types of government regulations that affect business
Analyze current trends in business
List costs that must be considered when starting a business
Select best location and layout for a business

Competency: Identify marketing mix

Competency Builders:

Explain importance of having the right product
Explain importance of having the product at the right place
Explain importance of having the product with the right promotion
Explain importance of having the product at the right price
Explain importance of having the product at the right time

Competency: Promote products and/or services

Competency Builders:

Explain selling function
Explain promotion function
Describe relationship of sales to promotion
Describe how to plan for special events and public relations activities
Explain importance of maintaining a check on competitors' promotions
Identify factors used to select appropriate products
Prepare merchandise/buying plan
Maintain vendor information and select appropriate vendors
Identify selling price
Keep abreast of merchandising trends

Competency: Manage customer relations

Competency Builders:
Identify advantages of customer services and accommodations
Identify advantages of attractive, comfortable facilities
Explain importance of price, quality, and variety
Use acceptable techniques in handling customer complaints

Competency: Minimize internal theft

Competency Builders:

Establish internal theft policy
Identify types of internal loss
Identify potential loss situations
Report employee theft
Follow company policies regarding internal theft
Follow security procedures

Competency: Explain financing methodologies

Competency Builders:

Explain leasing
Explain stock ownership
Explain bond ownership
Explain convertible securities
Explain bank loans

Competency: Identify costs of financial services

Competency Builders:

Classify revenue and expenses
Speculate on revenue sources and expenses
Identify start-up costs
Explain means of obtaining financial assistance
Explain importance of a sound credit rating
Outline long-range financial plans
Explain how sources of finance are used in business operations
Compare financial services available from financial institutions

Competency: Prepare financial records and reports

Competency Builders:

Record receipts and payments
Adjust cash flow upon the introduction of a variable
Justify budget items
Record income and expenditures
Report employee records for audit and taxation purposes

Competency: Explain management's role in operating a business

Competency Builders:

Explain importance of organizational skills
Identify management functions performed by entrepreneurs
Describe responsibilities and rewards of small business management
Compare specific management techniques
Explain importance of time management
Identify benefits of membership in professional/trade associations
Identify professional support system(s)
Explain need for basic accounting skills
Identify free sources of information and support
Explain importance of fundamental marketing skills
Describe benefits of continuous employee training

Competency: Practice safety precautions

Competency Builders:

Maintain safe work area
Operate equipment safely
Practice safety to prevent accidents
Follow procedures for reporting accidents
Follow safety procedures for special populations
Follow government regulations (e.g., OSHA, EPA)
Follow sanitation and hygiene procedures
Report emergencies to proper authorities
Identify emergency evacuation plans
Operate fire and safety equipment

Competency: Comply with government regulations

Competency Builders:

Identify sources of information and assistance
Identify regulations, licensing, and permits affecting business operations
Identify taxes affecting small businesses
Develop policies of compliance
Develop basic first aid skills
Monitor changing regulations

Competency: Perform management activities

Competency Builders:

Define management
Describe basic principles of good management
Identify effective leadership traits
Develop management objectives
Explain role of management in operating a business
Identify purposes of forecasting
Identify purpose of selecting appropriate marketing strategies
Develop short-term and long-term action plans
Describe importance of performance measurements and record keeping
Explain importance of keeping informed of developments and trends affecting business
Explain importance of planning for emergencies
Prepare managerial reports about production, personnel, equipment, and operational costs
Identify elements of a general budget
Describe use of credit by a business
Identify accounting statements that provide business information
Develop short/long range plans including Equal Access/Equal Opportunity (EAEO) guidelines
Develop procedures for handling employee complaints
Evaluate job applicants
Recommend employees for promotion
Identify contract laws
Describe the effects of insurance
Describe risk management alternatives (e.g., fire, theft, liability)
Describe consumer credit plans
Describe procedures for collection of accounts
Explain inventory control systems
Explain need for an equipment maintenance plan
Explain need for a facility maintenance plan

Unit: Supervision

Competency: Manage human resources

Competency Builders:

Apply appropriate management and leadership styles
Use foresight to anticipate and manage change
Display managerial and supervisory skills
Apply human relations skills
Develop management objectives
Create and/or implement organizational charts
Clarify company policies and procedures
Maintain office procedures manual(s)
Establish office procedures
Prepare and/or monitor budgets
Prepare managerial reports
Analyze production reports
Maintain appropriate work environment
Conduct tours
Monitor progress
Prepare and communicate productivity reports
Provide and/or coordinate training for new policies
Troubleshoot office problems
Communicate performance expectations
Counsel employees about career objectives
Maintain performance records
Adhere to company policies regarding discrimination and harassment
Address employees regarding disciplinary action(s)
Recommend employees for promotion
Explain procedure for handling grievances
Evaluate employee performance
Document personnel issues

Competency: Manage projects

Competency Builders:

Conduct needs analysis
Set priorities
Research information
Develop goals and objectives
Develop strategic plan
Develop project budget
Apply forecasting techniques
Apply prioritizing techniques
Schedule work assignments
Collect data
Analyze data
Act on data
Monitor project progress
Meet project timelines
Monitor budget
Apply quality measures and counter measures

Competency: Manage work flow

Competency Builders:

Plan office layout for workflow
Create organizational charts
Communicate operating policies and procedures
Maintain office procedures manual(s)
Identify production standards
Interface with other departments
Prioritize work
Assign work
Delegate work
Provide instruction
Monitor progress
Complete productivity and/or managerial reports
Complete assigned tasks in a timely manner
Coordinate with team members

Competency: Conduct staff/team meetings

Competency Builders:

Plan meeting
Set agenda
Set and schedule meeting
Schedule meeting room
Invite appropriate personnel
Identify need for outside speakers
Assign someone to take minutes
Make introductions
Invite questions and comments, and group participation
Focus on agenda items, but maintain issues list as they arise
Decide appropriate action, time frame, and accountability to tasks
Monitor time
Close meeting on time
Publish minutes in timely manner to appropriate persons

Competency: Conduct training

Competency Builders:

Secure training resources, materials, and equipment
Assess training needs
Train employees
Evaluate progress
Provide appropriate feedback
Document training participation

Paralegal

NOTE: Each TCP should respond to labor market demands in your area. Therefore, the following pages should be examined before being selected for use in TCP Part I (See "The TCP Process" Tab). For example, some units may not apply to your situation, nor might all the competencies within each unit be appropriate. Also, note that several units appear within each of the twelve occupations in this binder. Those "common" units should only appear once in the draft competency list for TCP Part I if you are compiling several occupations in a cluster format (See "TCP Matrix" Tab).

Units to Consider:	Page
Employability Skills	PL-3
Professionalism	PL-8
Teamwork	PL-12
Professional and Ethical Standards	PL-14
Economic and Business Principles	PL-16
Customer Relations	PL-20
Problem Analysis	PL-21
Project Management	PL-22
Technical Documentation	PL-23
Basic Personal Computer Concepts	PL-24
Packaged PC Applications	PL-26
General Office Functions	PL-31
Office Technology	PL-37
General Accounting Functions	PL-40
Business Law	PL-45
Legal Office Procedures	PL-48
Supervision	PL-50

DON'T FORGET TO INSERT YOUR ACADEMIC COMPETENCIES HERE

Communications Literacy, Mathematics Literacy, Science Literacy, and Technology Literacy have been removed so that you may insert your own academic lists here.

COMMUNICATIONS LITERACY

(e.g., Reading, Writing, Speaking, and Listening)

MATHEMATICS LITERACY

(e.g., Algebra, Geometry, Trigonometry, Calculus)

SCIENCE LITERACY

(e.g., Physical Science, Environmental Science, Agriscience, Biology, Chemistry, Physics, Anatomy & Physiology)

TECHNOLOGY LITERACY

(i.e., the impact of technology on humans and their home, work, and play environments)

Unit: Employability Skills

Competency: **Develop a career plan**

Competency Builders:

Identify current interests and aptitudes
Identify common barriers to employment
Describe strategies to overcome employment barriers
Locate resources for finding employment
Research job trends
Identify career options
Identify advantages and disadvantages of career options (in addition to other than monetary)
Identify job requirements
Investigate education/training opportunities
Evaluate personal strengths and weaknesses

Competency: Prepare for employment

Competency Builders:

Identify traditional and non-traditional employment sources
Identify present and future employment opportunities (by geographic location)
Research job opportunities, including non-traditional careers
Compare salary ranges and benefit packages
Compile occupational profile
Identify rights and responsibilities of equal employment opportunity laws
Design resume and cover letter
Target resume
Secure references
Investigate generic and specific employment tests (e.g., civil service exam; drug screening)
Use follow-up techniques to enhance employment potential
Demonstrate legible written communication skills using correct grammar, spelling, punctuation, and concise wording
Describe methods for handling illegal questions on job application forms and during interviews
Write letter of application
Research prospective employer and services performed
Explain critical importance of personal appearance, hygiene, and demeanor
Interpret job description
Demonstrate appropriate interview question and answer techniques
Demonstrate methods for handling difficult interview questions
Evaluate job offers
Write letter of acceptance
Write letter of declination
Demonstrate good listening skills
Ask for the job tactfully
Participate in extracurricular activities (e.g., student government, community projects,)

Competency: Evaluate the importance of self-esteem as an employability skill

Competency Builders:

Identify factors that affect self-esteem
Compare effects of low self-esteem and high self-esteem
Identify strategies to promote positive self-esteem

Competency: **Demonstrate job retention skills**

Competency Builders:

Identify employer expectations regarding job performance, work habits, attitudes, personal appearance, and hygiene
Exhibit appropriate work habits and attitude
Demonstrate ability to set priorities
Identify behaviors to establish successful working relationships
Identify alternatives for dealing with harassment, bias, and discrimination based on race, color, national origin, sex, religion, handicap, or age
Identify opportunities for advancement
List reasons for termination
List consequences of being absent frequently from job
List consequences of frequently arriving late for work
Demonstrate interpersonal relations skills (i.e., verbal and written)
Demonstrate negotiation skills
Demonstrate teamwork
Follow chain-of-command
Exhibit appropriate job dedication

Competency: **Demonstrate knowledge of work ethic**

Competency Builders:

Define work ethic
Identify factors that influence work ethic
Differentiate law and ethics
Describe how personal values are reflected in work ethic
Describe how interactions in the workplace affect personal work ethic
Describe how life changes affect personal work ethic

Competency: Exhibit appropriate work ethic

Competency Builders:

Use time-management techniques
Avoid personal activity during work hours
Attend work as scheduled
Adhere to company and/or governmental policies, procedures, rules, and regulations
Exercise confidentiality
Demonstrate appropriate human relations skills
Adhere to rules of conduct
Accept constructive criticism
Offer constructive criticism
Take pride in work
Resolve conflict
Manage stress
Avoid sexual connotations and harassment
Adjust to changes in the workplace
Demonstrate punctuality
Assume responsibility for personal decisions and actions
Take responsibility for assignments
Follow chain-of-command

Competency: Apply decision-making techniques

Competency Builders:

Identify decision to be made
Identify ownership of decision to be made
Identify possible alternatives and their consequences
Make decisions based on facts, legality, ethics, goals, and/or culture
Apply time factor(s)
Present decision to be implemented
Evaluate decision made
Take responsibility for decision

Competency: Apply problem-solving techniques

Competency Builders:

Identify problem
Select appropriate problem solving tools/techniques
Identify root problem cause(s)
Track root problem cause(s)
Identify possible solutions and their consequences (e.g., long term, short term, crisis)
Use resources to explore possible solutions to problem
Contrast advantages and disadvantages of each solution
Identify appropriate action
Evaluate results
Identify post-preventive action

Competency: Exhibit characteristics for job advancement

Competency Builders:

Display positive attitude
Demonstrate knowledge of position
Perform quality work
Adapt to changing situations and technology
Demonstrate capability/responsibility for different positions
Identify characteristics of effective leaders
Identify opportunities for leadership in work place/community
Demonstrate initiative to affect change in workplace
Participate in continuing education/training program
Responds appropriately to criticism from employer, supervisor, or other employees
Exhibit awareness of corporate culture
Prepare for job setbacks
Exhibit continual growth based on performance evaluation
Set realistic goals

Unit: Professionalism

Competency: Project professional image

Competency Builders:

Define professionalism
Exhibit professional appearance
Exhibit professional manners
Project professional attitude
Identify individuals' vital role in organization
Exhibit proper etiquette in professionally-related situations

Competency: Achieve individual and professional goals

Competency Builders:

Set flexible, realistic, and measurable goals
Identify potential barriers to achieving goals
Identify strategies for addressing barriers to goal achievement
Breakdown long-term goals into short-term goals
Prioritize goals
Commit to goals
Adjust goals
Obtain support for goals
Reward goal achievement

Competency: Manage personal finances

Competency Builders:

Explain need for personal management records
Balance checkbook
Identify tax obligations
Analyze how credit affects financial security
Compare types and methods of investments
Compare types and methods of borrowing
Compare types and methods of insurance
Compare types of retirement options/plans
Identify discriminatory vs. non-discriminatory expenditures

Competency: Support community well-being

Competency Builders:

Identify environmental, educational, and social issues
Participate in social and/or community activities

Competency: Achieve organizational goals

Competency Builders:

Evaluate personal goals in relation to organizational goals
Monitor progress by evaluating feedback
List responsibilities in relation to organization goals
Accomplish assigned tasks
Exercise responsibility in relation to organizational goals
Set appropriate personal performance standards
Communicate goals with supervisor and peers
Demonstrate knowledge of products and services
Promote organizational image and mission

Competency: Demonstrate positive relations in the workplace

Competency Builders:

Identify personality types of self and other
Identify various management styles
Support employer expectations
Support employer decisions
Accept constructive criticism
Give constructive feedback
Adapt to changes in workplace
List factors to consider before resigning
Write letter of resignation

Competency: **Manage stressful situations**

Competency Builders:

Accept stress as part of daily life
Identify personal and professional factors contributing to stress
Describe physical and emotional responses to stress
Evaluate positive and negative effects of stress on productivity
Identify strategies for reducing stress
Implement strategies to manage stress
Create strategies for developing and maintaining support systems

Competency: **Analyze effects of family on work and work on family**

Competency Builders:

Identify how family values, goals, and priorities are reflected in work place
Identify responsibilities and rewards associated with paid and non-paid work
Identify responsibilities and rewards associated with families
Explain how family responsibilities can conflict with work
Explain how work can conflict with family responsibilities
Explain how work-related stress can affect families
Explain how family-related stress can affect work
Identify family support systems and resources
Identify work-related support systems and resources
Communicate with family regarding work

Competency: **Apply lifelong learning skills**

Competency Builders:

Define lifelong learning
Identify factors that cause need for lifelong learning
Analyze effects of change
Identify reasons why goals change
Describe importance of flexibility and adaptability
Evaluate need for continuing education/training

Competency: **Manage professional development**

Competency Builders:

Identify career opportunities
Modify career plan
Participate in continuing education/training opportunities
Document continuing education/training
Read profession-related manuals, technical journals, and periodicals
Attend meetings, workshops, seminars, conferences, and demonstrations
Participate in professional organizations
Build personal/professional mentor relationship
Build personal/professional support system
Build professional network
Strengthen communication skills
Strengthen leadership skills
Strengthen management skills

Unit: Teamwork

Competency: **Demonstrate knowledge of teamwork**

Competency Builders:

Define empowerment
Differentiate work groups and teams
Identify conditions essential to teamwork (e.g., brainstorming)
Explain influence of culture (e.g., corporate, community) on teamwork
Identify appropriate situations for using teams
Define team structures (e.g., cross functional, quality improvement, task force, quality circles)
Identify team building concepts
Describe characteristics and dynamics of teams
Identify characteristics of effective team leaders and members
Identify responsibilities of a valuable team member
Identify methods of involving each member of a team
Explain how individuals from various backgrounds contribute to work-related situations (e.g., technical training, cultural heritage)
Explain the purpose of facilitators
Define consensus
Define reward/recognition system

Competency: **Demonstrate teamwork**

Competency Builders:

Identify purpose of team and intended goal (include time frames)
Structure team around purpose
Define responsibilities of team members
Contribute to efficiency and success of team
Work toward individual and team milestones
Analyze results of team project
Facilitate a team meeting
Assist team member(s) with problem
Monitor time frame
Stress continuous improvement
Accept failure as part of learning

Competency: Use teamwork to solve problems

Competency Builders:

Identify appropriate situations for using teams
Use problem-solving process in a team setting
Identify quality management processes/techniques
Identify quality assurance processes/techniques
Prepare presentation

Competency: Conduct team meetings

Competency Builders:

Plan agenda
Schedule meeting and location
Invite appropriate personnel
Solicit outside speakers as needed
Assign someone to take minutes
Facilitate introductions
Invite questions and comments and group participation
Focus team on agenda items
Assign appropriate action, time frame and accountability to tasks
Monitor time
Close meeting on time
Publish minutes in timely manner
Set ground rules
Avoid placing individual agendas above the group's agenda

Unit: Professional and Ethical Standards

Competency: Explain professional responsibilities

Competency Builders:

Explain the need for professional and ethical standards
Explain responsibility of the individual to apply ethical standards
Identify responsibility to client(s) or employer(s)
Explain employer's consequences of unprofessional and/or unethical employee behavior
Identify responsibility to self (e.g., professional appearance and limitations) and to profession
Explain importance of conflict resolution in the workplace

Competency: Describe self-managed employees

Competency Builders:

Explain the need for organizing tasks
Explain management-by-objectives
Explain importance of planning, both long-term and short-term
Explain importance of evaluating progress
Explain importance of reporting progress
Explain time management
Explain the benefit of creative brainstorming and innovative thinking

Competency: Describe intellectual property

Competency Builders:

Explain legal ownership of proprietary assets produced by the computing professional
Explain public policy
Explain rights of the originator
Explain rights of the public
Explain patent
Explain copyright
Explain licenses
Explain confidentiality

Competency: **Apply professional and ethical standards**

Competency Builders:

Identify computing industry's standards
Describe computing industry's code of ethics
Explain various ethics established by computing societies
Apply various ethics established by computing societies

Unit: Economic and Business Principles

Competency: Describe basic economic concepts

Competency Builders:

Identify importance of economic resources
Explain concept of economic resources
Explain importance of economic resources
Explain concept of economic goods and services
Differentiate between economic goods and services
Differentiate between needs and wants
Explain concept of supply and demand
Explain concept of price
Explain how supply, demand, and price are related
Explain concept of private enterprise and business ownership
Explain concept of profit
Explain concept of risk
Explain concept of competition
Explain relationship among risk, competition, and profit

Competency: Conduct training

Competency Builders:

Secure training resources, materials, and equipment
Assess training needs
Train employees
Evaluate progress
Provide appropriate feedback

Competency: Evaluate economic systems

Competency Builders:

Compare types of economic systems
Research free enterprise system
Interpret relationship between government and business
Interpret relationship between labor and management

Competency: Illustrate basic economic principles

Competency Builders:

Illustrate global economic and world market applications
Illustrate economic cycles (e.g., unemployment, recession, inflation, budget deficits)
Illustrate economic activity's affect on business (e.g., financial, competitor indicators, industry)

Competency: Analyze cost and profit influences

Competency Builders:

Identify importance of maximizing quality
Identify importance of maximizing productivity
Contrast specialized training and cross training
Contrast labor and management
Contrast government and business

Competency: Illustrate economic indicators and trends

Competency Builders:

Define gross national product and gross domestic product
Interpret impact of interest rates
Interpret impact of government spending
Interpret impact of seasonal business cycles
Interpret impact of inflation, growth, recession, and unemployment
Interpret impact of national and world events
Interpret impact of the growth of international trade

Competency: Explain basic international trade concepts

Competency Builders:

Explain nature and importance of international trade
Contrast advantages and disadvantages of marketing in international trade
Explain balance of trade concepts
Describe impact of foreign investment

Competency: Explain basic business concepts

Competency Builders:

Identify functions of business
Explain role of management
Explain role of labor
Explain concept of service as a product
Explain role of administration
Explain role of operations
Identify role of company objectives
Identify importance of ethical business practices
Identify types of ownership
Identify components of a business plan

Competency: Summarize business principles

Competency Builders:

Explain business organizations and functions
Describe business reporting and information flow
Map interface of departmental functions
Identify communication channels (e.g., formal, informal)
Explain total quality management (TQM) principles

Competency: Illustrate legal concepts

Competency Builders:

Define legal terminology
Explain business law concepts
Interpret contracts and/or legal documents
Explain relationship of laws and regulations to company contracts, policies, and procedures
Explain laws relating to working conditions, wages and hours, civil rights, social security, disability, and unemployment insurance

Competency: Explain role of marketing

Competency Builders:

Explain aspects of sound business image
Identify purposes of marketing
Identify functions of marketing
Describe effects of marketing
Explain product/service variety
Identify target markets
Define sales potential
Explain pricing strategies
Differentiate advertising campaigns
Explain advantages and disadvantages of advertising agencies
Describe sales incentive programs
Maintain marketing feedback and make appropriate changes
Identify types of marketing strategies and the advantage and disadvantage of each
(e.g. phone, mail, person)
Design monitor plan

Competency: Serve customers/clients

Competency Builders:

Identify importance of customer
Identify customer services to provide
Relate to customers in timely fashion
Identify customer needs and wants
Gather complete and accurate information
Apply customer service concepts and terminology
Identify methods for addressing dissatisfied customers

Unit: Customer Relations

Competency: Demonstrate positive relations with customers

Competency Builders:

Identify importance of customers to business
Differentiate between customer needs and wants
Provide prompt and courteous service
Resolve customer inquiries and complaints and/or refer customer to appropriate person
Identify methods of addressing dissatisfied customers

Competency: Perform scheduling functions to meet customers needs

Competency Builders:

Create calendar/schedule
Maintain appointment calendars
Process requests for appointments
Verify appointments
Notify customer of changes in schedule
Manage scheduling conflicts

Unit: Problem Analysis

Competency: Appraise situations

Competency Builders:

Identify concerns
Classify concerns
Set priorities
Identify resolution process
Plan resolution

Competency: Analyze potential problems

Competency Builders:

Identify potential problems
Identify likely causes
Identify preventive actions
Identify contingent actions

Competency: Analyze actual problems

Competency Builders:

Identify deviation
Identify problem and possible causes
Test for probable causes
Verify cause

Competency: Analyze decisions

Competency Builders:

Identify objective(s)
Classify objective(s)
Identify alternatives
Evaluate alternatives
Assess risks
Make final choice

Unit: Project Management

Competency: Explain project management

Competency Builders:

Identify project purpose/goal
Identify project objectives
Identify work breakdown structure (WBS)
Identify resource requirements

Competency: Plan projects

Competency Builders:

Apply responsibility assignment matrix (RAM)
Apply Gantt or bar charts
Apply network diagrams
Apply critical path method (CPM)
Apply project education and review techniques
Apply software programs

Competency: Implement projects

Competency Builders:

Monitor project
Control project
Modify project

Competency: Evaluate projects

Competency Builders:

Analyze performance
Close-out project evaluation
Draw project management conclusions

Unit: Technical Documentation

Competency: **Demonstrate proficiency in technical documentation**

Competency Builders:

Identify parameters
Ask questions
Interpret specifications or drawings
Record process (e.g., flowchart, step-by-step)
Record data
Maintain test logs
Compile cumulative reference/record

Competency: **Demonstrate proficiency in technical report writing**

Competency Builders:

Use data books and cross reference/technical manuals
Identify type of report needed
Compile relevant data
Design applicable charts and graphs
Analyze data
Draw conclusions
Outline reports
Write reports
Present reports

Unit: Basic Personal Computer Concepts

Competency: Explain use of personal computers in business

Competency Builders:

Describe the impact of computer use on individuals and businesses
Identify basic applications of computers in business
Identify automated business systems and electronic media
Identify different types and sizes of computers
Define input, processor, output, and storage units
Identify how PCs integrate with other information technologies (e.g., scanners, mainframes)
Describe impact of computer use on individuals and business
Identify basic applications of computers in business

Competency: Describe personal computer operations

Competency Builders:

Explain how data is stored in main computer memory
Explain how a computer system executes program instruction
Explain electronic storage capacity
Explain electronic units of measure and how they represent data
Identify data storage techniques
Identify types of memory
Explain different types of input and output

Competency: Explain information processing

Competency Builders:

Define operating systems
Describe the difference between data files and program files
Demonstrate knowledge of system commands
Define software types and functions
Describe basic disk operation and care
List business applications of software package
List advantages and disadvantages of integrated and dedicated software

Competency: **Demonstrate computer literacy**

Competency Builders:

Identify computer components
Identify parallel versus serial ports
Explain differences between conventional, expanded, and extended memory
Identify use of storage media
List commands that affect disk operation
Use disk operating system to format disks
Originate directories and subdirectories
Explain common configuration variables
Explain device driver concepts
Demonstrate commands that open, close, copy, delete, and rename files on disk
Keyboard document(s) using computer

Unit: Packaged PC Applications

Competency: Explain software applications

Competency Builders:

Describe need for application software
Describe different types of software applications
Explain advantages and disadvantages of various software applications
List software sources
Explain copyright laws for software

Competency: Explain spreadsheet packages

Competency Builders:

Define spreadsheet
Demonstrate knowledge of basic spreadsheet terminology
Define components of spreadsheets
Describe implementation of spreadsheet operations in business scope

Competency: Perform word processing functions

Competency Builders:

Define word processing terminology
Explain functions of word processing software
Explain word processing applications
Use appropriate reference materials
Keyboard efficiently by touch
Use mouse
Initialize diskette
Prepare backup file
Maintain backup file
Update spelling dictionary and spell check
Perform document functions (e.g., locate, rename, delete, save, retrieve, copy)
Perform formatting functions (e.g., set margins and tabs, center, underline, bold, cut and paste)
Use edit features
Use sort features
Add page numbers to document
Add headers and footers
Print files, pages, screens and blocks of text
Verify accuracy of output
Create a document
Save a document to disk
Retrieve a document from disk
Edit an existing document
Describe word-wrap
Print a document
Create glossary file
Store boilerplate material
Compose documents at keyboard
Tabulate multiple columns
Prepare new documents from existing ones
Merge selected copy with new information
Prepare various types of table options
Index text
Format text
Integrate database, spreadsheet and graphic files
Convert documents from one system to another
Demonstrate use of computer thesaurus
Use multimedia techniques/resources

Competency: Use spreadsheet packages

Competency Builders:

Use spell check
Execute an electronic spreadsheet
Enter data, formulas, and functions
Differentiate between labels and numbers
Compare absolute and relative addressing
Speculate using "what if..." questions
Sequence keystrokes in the creation of a macro
Create database within spreadsheet and perform data query functions
Move around in spreadsheet and correct errors
Format spreadsheet
Create graphs
Print graphs
Save previously saved files
Load previously saved files
Replicate cells using copy commands
Use electronic spreadsheet to complete business application
Use spreadsheet to plan financial strategies
Prepare spreadsheet
Use multimedia techniques/resources

Competency: Explain database packages

Competency Builders:

Define database
Explain terms used in database systems
Describe common functions of database systems

Competency: **Use database packages**

Competency Builders:

Use database package to create, input, edit, and display fields and records
Analyze structure of database files
Perform calculations with a database file
Alter structure of database file
Sort records based on multiple fields
Identify advanced database technology
Use appropriate reference materials
Create relational database
Enter elements into database
Proofread database
Edit database
Design report formats
Apply database management system (DBMS) commands
Print reports using data from multiple databases
Use database files with other application software
Verify accuracy of output (e.g., edit reports)
Use multimedia techniques/resources

Competency: **Explain function of shared environments**

Competency Builders:

List purposes of a network environment
Define electronic mail
Identify advantages and disadvantages of electronic mail
Describe impact of local and wide area networks on mail delivery

Competency: **Use a shared environment**

Competency Builders:

Compose electronic messages
Send electronic messages using appropriate format
List categories of electronic mail service
Transmit document using electronic mail system
Monitor electronic mail

Competency: Manage software packages

Competency Builders:

Install software packages
Upgrade software packages
Document installation of software packages
Convert data files

Competency: Perform computer business graphics

Competency Builders:

Define purpose and types of graphics
Use appropriate reference materials
Create graphics
Proofread graphics
Edit graphics
Save graphics
Retrieve graphics
Print graphics to various output devices
Verify accuracy of output
Use graphic functions to create files, input data, process data, and produce output
Use graphics files with other application software

Competency: Use graphic user interface (GUI) techniques

Competency Builders:

Explain multi tasking environment
Setup data exchange between two different applications
Setup an object link between two different applications
Explain the use of dynamic link libraries

Unit: General Office Functions

Competency: Maintain a safe working environment

Competency Builders:

Comply with company safety and health rules and regulations
Use appropriate reference materials
Use equipment correctly
Use appropriate actions during emergencies
Maintain a clean and orderly work area

Competency: Maintain work flow

Competency Builders:

Organize work
Prioritize work
Apply time-management techniques
Complete assigned tasks in a timely manner
Coordinate with team members as needed

Competency: Demonstrate positive relations with customers/clients

Competency Builders:

Identify importance of repeat customers to business
Identify customer needs and wants
Provide prompt and courteous service
Resolve customer inquiries and complaints and/or refer customer to appropriate person

Competency: Perform telephone operations

Competency Builders:

Use appropriate reference materials
Display telephone etiquette
Operate equipment
Route calls
Listen assertively
Verify information
Screen calls
Record messages
Relay messages timely
Place calls
Log long-distance calls
Create telephone directories
Maintain telephone directories
Organize teleconferences
Use voice mail/messaging systems

Competency: Use facsimile machine

Competency Builders:

Explain how a facsimile machine operates
Record information regarding material being sent
Operate facsimile
Verify to sender that process has been completed
File copy of facsimile order
Maintain supplies for facsimile use
Log maintenance needs regarding facsimile

Competency: Assist visitors

Competency Builders:

Greet visitors
Screen visitors
Maintain visitor log
Make appropriate introductions
Portray professional image

Competency: Perform scheduling functions

Competency Builders:

Create calendar/schedule
Maintain appointment calendars
Process requests for appointments
Verify appointments

Competency: Use job-related reference materials

Competency Builders:

Identify reference materials
Assemble reference materials
Abstract information from reference materials
Compile data

Competency: Coordinate meeting arrangements

Competency Builders:

Make arrangements with meeting planners
Distribute agenda
Assemble relevant information
Notify participants
Confirm arrangements

Competency: Generate minutes

Competency Builders:

Record appropriate notes
Gather materials
Prepare minutes
Distribute minutes
File minutes

Competency: Coordinate travel plans

Competency Builders:

Check travel resources
Inquire about traveler's preferences
Arrange necessary transportation and lodging
Obtain passports and/or visas
Confirm arrangements
Prepare itineraries
Distribute itineraries
Alter arrangements

Competency: Perform mail functions

Competency Builders:

Identify various mail and delivery services
Process incoming mail
Distribute mail
Operate equipment
Process outgoing mail

Competency: Maintain office supplies

Competency Builders:

Prepare cost justification for purchasing supplies
Order supplies
Verify supply order against supplies
Store and secure supplies
Distribute supplies
Inventory supplies
Prepare inventory reports

Competency: Perform copying functions

Competency Builders:

Use appropriate reference materials
Operate equipment
Collate documents
Maintain equipment
Identify copying methods
Identify best copying method for task
Identify characteristics of paper stock
Keep appropriate records
Identify appropriate copyright applications

Competency: Maintain filing system

Competency Builders:

Give reasons for keeping records
Identify types of records needed
Develop proper techniques/procedures for maintaining records
Use appropriate reference materials
Describe procedure for initial inventory of records
Organize files
Index files
File information
Retrieve information
Consolidate files
Archive or destroy files
Secure files for legality and confidentiality
Follow retention schedule
Create new files
Update files
Prepare materials for filing
Sort documents
Apply cross-referencing and logging systems
Store documents
Locate documents

Competency: **Maintain hardware and software**

Competency Builders:

Use appropriate reference materials
Evaluate hardware and software
Recommend hardware and software
Schedule routine hardware maintenance
Update software
Report malfunction(s)
Maintain usage logs
Inventory hardware and software

Unit: Office Technology

Competency: Use telecommunications

Competency Builders:

Define the role of telecommunications in business
Use appropriate reference materials
Operate telephone systems
Operate fax machines

Competency: Perform basic word processing functions

Competency Builders:

Create glossary file
Store boilerplate material
Compose documents at keyboard
Tabulate multiple columns
Prepare new documents from existing ones
Merge selected copy with new information
Prepare various types of table options
Index text
Format text
Integrate database, spreadsheet, and graphics files
Convert documents from one system to another
Demonstrate use of computer thesaurus

Competency: Perform transcription functions

Competency Builders:

Identify various types of dictation/transcription equipment
Keyboard documents
Proofread documents
Edit documents
Save documents
Retrieve documents
Print documents

Competency: Use computerized filing system

Competency Builders:

Identify uses for electronic filing system
List advantages and disadvantages of electronic filing
Retrieve information from filing system
Store records electronically
Duplicate records electronically
Transmit records electronically
Maintain financial records

Competency: Perform database functions

Competency Builders:

Identify advanced database technology
Use appropriate reference materials
Create relational database
Enter elements into database
Proofread database
Edit database
Design report formats
Apply database management system (DBMS) commands
Print reports using data from multiple databases
Use database files with other application software
Verify accuracy of output

Competency: Perform desktop publishing functions

Competency Builders:

Define desktop publishing
Explain word processing functions in desktop publishing
Use appropriate reference materials
Use desktop publishing terms
Use desktop publishing software
Use graphic design and layout functions of desktop publishing
Design publications
Merge word-processing, graphics, database, and spreadsheet files
Proofread documents
Edit documents
Save documents
Retrieve documents
Print documents using various output devices

Competency: Perform computer business graphics

Competency Builders:

Define purpose and types of graphics
Use appropriate reference materials
Create graphics
Proofread graphics
Edit graphics
Save graphics
Retrieve graphics
Print graphics to various output devices
Verify accuracy of output
Use graphic functions to create files, input data, process data, and produce output
Use graphics files with other application software

Unit: General Accounting Functions

Competency: Apply arithmetical accounting skills

Competency Builders:

Compute cash discounts for various terms
Compute trade discounts
Compute extension, sales tax, and totals of sales slips
Compute markups and markdowns
Calculate rates of trade and cash discounts
Calculate unit prices given quantity prices
Calculate costs of portions of units
Solve problems involving fractions, decimals, and percentages
Solve commission problems
Solve finance-charge problems
Solve annual percentage rate problems

Competency: Apply accounting principles

Competency Builders:

Define accounting terminology
Define journals and ledgers
Identify basic accounting principles
Identify basic accounting applications
Identify computer accounting applications
Identify financial control procedures
Explain increases and decreases in accounts
Explain periodic reporting procedures
Prepare income statement
Prepare balance sheet columns
Prepare cash flow statement
Interpret balance sheets
Interpret income statements
Interpret cash-flow analysis statements

Competency: Perform manual accounting functions

Competency Builders:

Explain use of record keeping in relation to business and economic applications
Use appropriate reference materials
Analyze transactions
Use "T" accounts to label increases, decreases, and balances
Record transactions
Process receivables
Monitor expense accounts
Process payables
Prepare budgets
Process purchases
Prepare comparative (actual vs. budget) income statement

Competency: Perform automated accounting functions

Competency Builders:

Use appropriate reference materials
Operate equipment
Key data on numeric keyboard
Import or download data from computer records
Scan data from various media
Use integrated software package for simulation of accounting cycle
Set up chart of accounts for general ledger
Set up accounts payable and accounts receivable ledgers
Add accounts to general and subsidiary ledgers
Input account balances
Enter journal transactions
Process journal transaction
Prepare trial balance
Verify data and correct errors
Generate reports
Proofread accounting records and statements
Edit accounting records and statements
Save accounting records and statements
Retrieve accounting records and statements
Print accounting records and statements

Competency: Perform spreadsheet functions

Competency Builders:

Explain computer spreadsheet analysis
Use appropriate reference materials
Operate equipment
Create or format spreadsheet
Enter formulas
Move cells and ranges
Enter data on spreadsheet
Import or download data to spreadsheet
Apply data sort, data query, data fill, and data distribution
Export spreadsheet files to word processing, graphics and database files
Import spreadsheet files to word processing, graphics and database files
Proofread spreadsheet data
Edit spreadsheet data
Verify accuracy of output
Save spreadsheet
Retrieve spreadsheet
Print spreadsheet
Use spreadsheet functions to create files, input data, process data, and produce output
Use spreadsheet files with other application software

Competency: Perform payroll functions

Competency Builders:

Use appropriate reference materials
Collect payroll data
Process payroll
Comply with company policies and procedures
Comply with government and legal requirements
Maintain records and forms
Monitor personnel costs

Competency: Perform banking functions

Competency Builders:

Use appropriate reference materials
Prepare checks, deposit slips, and withdrawal slips
Maintain checkbook
Balance checkbook
Maintain petty cash
Balance petty cash
Explain automated banking transactions
Prepare banking records
Maintain banking records

Competency: Process cost accounting information

Competency Builders:

Define cost accounting, direct materials, direct labor and overhead
Define cost allocation methods
Identify source documents
Compute direct materials by job or process
Compute direct labor by job or process
Compute overhead rates to apply to jobs or processes
Compute cost of goods produced
Compute cost of goods sold
Journalize cost of goods produced and sold entries
Post cost of goods produced and sold entries
Compute cost of inventories
Prepare cost production reports
Prepare related records of job or process costs

Competency: Process end-of-fiscal-period information

Competency Builders:

Prepare worksheet
Prepare trial balance
Foot ledger accounts and compute balances
Prove equality of debits and credits
Locate errors
Record adjustments
Make appropriate extensions
Journalize basic adjusting, closing, and reversing entries
Post basic adjusting, closing, and reversing entries
Prepare basic income statement
Prepare basic balance sheet
Prepare basic cash flow statement

Unit: Business Law

Competency: Explain legal rights and responsibilities

Competency Builders:

Describe different types of laws
Identify rules of law affecting minors
Describe differences between crimes and torts
Describe court system and how a case goes to trail

Competency: Demonstrate knowledge of labor law

Competency Builders:

Describe rights and responsibilities of parties to an employment contract
Identify state and federal laws dealing with employment
Identify protections available to employees

Competency: Demonstrate knowledge of environmental law

Competency Builders:

Describe EPA regulations
Identify environmental regulation agencies (e.g., EPA, OSHA, TASA, RCRA, DOT)
Use reference applicable materials
Explain reporting procedures for violations to appropriate agencies
Identify reporting procedures and forms used
Identify industrial hygiene law and regulations (e.g., NIOSH)

Competency: Demonstrate knowledge of contract law

Competency Builders:

Analyze elements of a contract
Differentiate between contracts that are transferable and contracts that are not transferable
Identify means of discharging contracts
Describe means of discharging contracts
Describe remedies available for a breach of contract

Competency: Demonstrate knowledge of corporation law

Competency Builders:

Explain the different types of business structures (e.g., sole proprietorship, general partnership, limited partnership, corporation including subchapter S)
Describe how to form a corporation
Describe the difference between equity and debt securities
Identify the principle/agent relationship and the basic terms of employment agreements
Identify special forms of corporations
Name corporation purpose and structure

Competency: Demonstrate knowledge of consumer law

Competency Builders:

Describe types of negotiable instruments
Describe laws related to buying on credit
Explain negotiable instruments
Identify factors to consider when borrowing money
Describe laws that apply to the collection of negotiable instruments
Identify regulatory agencies (e.g., FDIC, FTC)
Explain retirement plans (e.g., IRAs, 401Ks)

Competency: Demonstrate knowledge of real estate law

Competency Builders:

Describe legal documents relating to residential transactions
Explain a residential real estate settlement procedure
Describe title insurance and financing documents
Identify various documents relating to the sale of commercial property
Explain a commercial real estate settlement

Competency: **Demonstrate knowledge of estates, trusts and wills**

Competency Builders:

Explain information needed to administer an estate
Identify legal procedure of Letters Testamentary and Letters of Administration through probate
Demonstrate other legal procedures pertinent to estates
Explain court documents commonly filed in connection with estate administration
Identify tax returns for an estate
Explain wills and inter-vivos trusts

Unit: Legal Office Procedures

Competency: Demonstrate proficiency in legal terminology

Competency Builders:

Identify correct legal and Latin terms as they occur
Spell legal terms
Define legal terms
Differentiate among types of legal "documents" such as pleadings, contracts, and forms that include deeds, wills, mortgages, etc.
Prepare legal documents
Edit legal correspondence for accuracy of content
Identify procedures for maintaining confidentiality of client information

Competency: Demonstrate proficiency in legal communication

Competency Builders:

Gather initial intake information from clients
Describe systems of adjudication (including federal and state court systems, administrative proceedings, and private court systems)
Prepare case, file, and the client for trial/hearing/conference or settlement
File court documents, "rules for obtaining service", etc.
Explain rules and procedures during trial, administrative hearings, and conferences
Use business principles and terminology
Use finance principles and terminology
Explain fundamental concepts and terminology in insurance
Describe common law office management and operation
Explain basic legal principles of torts vs. crimes, contracts, real property, etc.
Differentiate among torts vs. crimes, contracts, real property, etc.
Explain principles of trusts, estates and probates
Demonstrate various sources of legal authority such as statutes, cases, and administrative codes and commentators
Demonstrate ability to complete legal research, which includes the application to a specific case or concept

Competency: Maintain filing system

Competency Builders:

File documents, using an alphanumeric filing system
Maintain tickler "system"
Prepare records for new clients
Maintain forms file
Identify account situation that should be held in escrow
Cross-reference cases by citation and by subject
Identify authoritative treatises and major commentators in such areas as contracts, torts, and real property law
Name fundamental legal procedures for domestic relations, civil law and criminal law, as well as consumer and contract law
Explain discovery tools used to obtain relevant information from adverse parties
Prepare commonly used court documents, such as pleadings, subpoenas, affidavits,
income and expense statements, property inventories and the like in readable format
Differentiate between implied warranties and expressed warranties (consumer law)
Explain attorney-client relationship that leads to code of ethics

Competency: Demonstrate proficiency in litigation

Competency Builders:

Explain basic steps in the conduct of civil lawsuit and criminal proceedings from pleadings through appeal
Identify use of basic discovery tools, such as depositions and interrogatories
Prepare digests of deposition transcripts and other forms of recorded testimony
Prepare pleadings in proper form
Draft written discovery requests designed to elicit specific relevant information
Detail the uses of pre-trial motions

Unit: Supervision

Competency: Manage human resources

Competency Builders:

Apply appropriate management and leadership styles
Use foresight to anticipate and manage change
Display managerial and supervisory skills
Apply human relations skills
Develop management objectives
Create and/or implement organizational charts
Clarify company policies and procedures
Maintain office procedures manual(s)
Establish office procedures
Prepare and/or monitor budgets
Prepare managerial reports
Analyze production reports
Maintain appropriate work environment
Conduct tours
Monitor progress
Prepare and communicate productivity reports
Provide and/or coordinate training for new policies
Troubleshoot office problems
Communicate performance expectations
Counsel employees about career objectives
Maintain performance records
Adhere to company policies regarding discrimination and harassment
Address employees regarding disciplinary action(s)
Recommend employees for promotion
Explain procedure for handling grievances
Evaluate employee performance
Document personnel issues

Competency: Manage projects

Competency Builders:

Conduct needs analysis
Set priorities
Research information
Develop goals and objectives
Develop strategic plan
Develop project budget
Apply forecasting techniques
Apply prioritizing techniques
Schedule work assignments
Collect data
Analyze data
Act on data
Monitor project progress
Meet project timelines
Monitor budget
Apply quality measures and counter measures

Competency: Manage work flow

Competency Builders:

Plan office layout for workflow
Create organizational charts
Communicate operating policies and procedures
Maintain office procedures manual(s)
Identify production standards
Interface with other departments
Prioritize work
Assign work
Delegate work
Provide instruction
Monitor progress
Complete productivity and/or managerial reports
Complete assigned tasks in a timely manner
Coordinate with team members

Competency: Conduct staff/team meetings

Competency Builders:

Plan meeting
Set agenda
Set and schedule meeting
Schedule meeting room
Invite appropriate personnel
Identify need for outside speakers
Assign someone to take minutes
Make introductions
Invite questions and comments, and group participation
Focus on agenda items, but maintain issues list as they arise
Decide appropriate action, time frame, and accountability to tasks
Monitor time
Close meeting on time
Publish minutes in timely manner to appropriate persons

Competency: Conduct training

Competency Builders:

Secure training resources, materials, and equipment
Assess training needs
Train employees
Evaluate progress
Provide appropriate feedback
Document training participation

Management Information Specialist

NOTE: Each TCP should respond to labor market demands in your area. Therefore, the following pages should be examined before being selected for use in TCP Part I (See "The TCP Process" Tab). For example, some units may not apply to your situation, nor might all the competencies within each unit be appropriate. Also, note that several units appear within each of the twelve occupations in this binder. Those "common" units should only appear once in the draft competency list for TCP Part I if you are compiling several occupations in a cluster format (See "TCP Matrix" Tab).

Units to Consider:	Page
Employability Skills	MI-3
Professionalism	MI-8
Teamwork	MI-12
Professional and Ethical Standards	MI-14
Economic and Business Principles	MI-16
Customer Relations	MI-20
Problem Analysis	MI-21
Project Management	MI-22
Technical Documentation	MI-23
Basic Personal Computer Concepts	MI-24
Packaged PC Applications	MI-26
General Office Functions	MI-31
Office Technology	MI-37
General Accounting Functions	MI-40
Specialized Accounting Functions	MI-45
Computer Operations	MI-51
Network Operations	MI-55
Basic Mainframe Concepts	MI-60
Supervision	MI-62

DON'T FORGET TO INSERT YOUR ACADEMIC COMPETENCIES HERE

Communications Literacy, Mathematics Literacy, Science Literacy, and Technology Literacy have been removed so that you may insert your own academic lists here.

COMMUNICATIONS LITERACY

(e.g., Reading, Writing, Speaking, and Listening)

MATHEMATICS LITERACY

(e.g., Algebra, Geometry, Trigonometry, Calculus)

SCIENCE LITERACY

(e.g., Physical Science, Environmental Science, Agriscience, Biology, Chemistry, Physics, Anatomy & Physiology)

TECHNOLOGY LITERACY

(i.e., the impact of technology on humans and their home, work, and play environments)

Unit: Employability Skills

Competency: **Develop a career plan**

Competency Builders:

Identify current interests and aptitudes
Identify common barriers to employment
Describe strategies to overcome employment barriers
Locate resources for finding employment
Research job trends
Identify career options
Identify advantages and disadvantages of career options (in addition to other than monetary)
Identify job requirements
Investigate education/training opportunities
Evaluate personal strengths and weaknesses

Competency: **Prepare for employment**

Competency Builders:

Identify traditional and non-traditional employment sources
Identify present and future employment opportunities (by geographic location)
Research job opportunities, including non-traditional careers
Compare salary ranges and benefit packages
Compile occupational profile
Identify rights and responsibilities of equal employment opportunity laws
Design resume and cover letter
Target resume
Secure references
Investigate generic and specific employment tests (e.g., civil service exam; drug screening)
Use follow-up techniques to enhance employment potential
Demonstrate legible written communication skills using correct grammar, spelling, punctuation, and concise wording
Describe methods for handling illegal questions on job application forms and during interviews
Write letter of application
Research prospective employer and services performed
Explain critical importance of personal appearance, hygiene, and demeanor
Interpret job description
Demonstrate appropriate interview question and answer techniques
Demonstrate methods for handling difficult interview questions
Evaluate job offers
Write letter of acceptance
Write letter of declination
Demonstrate good listening skills
Ask for the job tactfully
Participate in extracurricular activities (e.g., student government, community projects,)

Competency: **Evaluate the importance of self-esteem as an employability skill**

Competency Builders:

Identify factors that affect self-esteem
Compare effects of low self-esteem and high self-esteem
Identify strategies to promote positive self-esteem

Competency: Demonstrate job retention skills

Competency Builders:

Identify employer expectations regarding job performance, work habits, attitudes, personal appearance, and hygiene
Exhibit appropriate work habits and attitude
Demonstrate ability to set priorities
Identify behaviors to establish successful working relationships
Identify alternatives for dealing with harassment, bias, and discrimination based on race, color, national origin, sex, religion, handicap, or age
Identify opportunities for advancement
List reasons for termination
List consequences of being absent frequently from job
List consequences of frequently arriving late for work
Demonstrate interpersonal relations skills (i.e., verbal and written)
Demonstrate negotiation skills
Demonstrate teamwork
Follow chain-of-command
Exhibit appropriate job dedication

Competency: Demonstrate knowledge of work ethic

Competency Builders:

Define work ethic
Identify factors that influence work ethic
Differentiate law and ethics
Describe how personal values are reflected in work ethic
Describe how interactions in the workplace affect personal work ethic
Describe how life changes affect personal work ethic

Competency: Exhibit appropriate work ethic

Competency Builders:

Use time-management techniques
Avoid personal activity during work hours
Attend work as scheduled
Adhere to company and/or governmental policies, procedures, rules, and regulations
Exercise confidentiality
Demonstrate appropriate human relations skills
Adhere to rules of conduct
Accept constructive criticism
Offer constructive criticism
Take pride in work
Resolve conflict
Manage stress
Avoid sexual connotations and harassment
Adjust to changes in the workplace
Demonstrate punctuality
Assume responsibility for personal decisions and actions
Take responsibility for assignments
Follow chain-of-command

Competency: Apply decision-making techniques

Competency Builders:

Identify decision to be made
Identify ownership of decision to be made
Identify possible alternatives and their consequences
Make decisions based on facts, legality, ethics, goals, and/or culture
Apply time factor(s)
Present decision to be implemented
Evaluate decision made
Take responsibility for decision

Competency: Apply problem-solving techniques

Competency Builders:

Identify problem
Select appropriate problem solving tools/techniques
Identify root problem cause(s)
Track root problem cause(s)
Identify possible solutions and their consequences (e.g., long term, short term, crisis)
Use resources to explore possible solutions to problem
Contrast advantages and disadvantages of each solution
Identify appropriate action
Evaluate results
Identify post-preventive action

Competency: Exhibit characteristics for job advancement

Competency Builders:

Display positive attitude
Demonstrate knowledge of position
Perform quality work
Adapt to changing situations and technology
Demonstrate capability/responsibility for different positions
Identify characteristics of effective leaders
Identify opportunities for leadership in work place/community
Demonstrate initiative to affect change in workplace
Participate in continuing education/training program
Responds appropriately to criticism from employer, supervisor, or other employees
Exhibit awareness of corporate culture
Prepare for job setbacks
Exhibit continual growth based on performance evaluation
Set realistic goals

Unit: Professionalism

Competency: **Project professional image**

Competency Builders:

Define professionalism
Exhibit professional appearance
Exhibit professional manners
Project professional attitude
Identify individuals' vital role in organization
Exhibit proper etiquette in professionally-related situations

Competency: **Achieve individual and professional goals**

Competency Builders:

Set flexible, realistic, and measurable goals
Identify potential barriers to achieving goals
Identify strategies for addressing barriers to goal achievement
Breakdown long-term goals into short-term goals
Prioritize goals
Commit to goals
Adjust goals
Obtain support for goals
Reward goal achievement

Competency: **Manage personal finances**

Competency Builders:

Explain need for personal management records
Balance checkbook
Identify tax obligations
Analyze how credit affects financial security
Compare types and methods of investments
Compare types and methods of borrowing
Compare types and methods of insurance
Compare types of retirement options/plans
Identify discriminatory vs. non-discriminatory expenditures

Competency: Support community well-being

Competency Builders:

Identify environmental, educational, and social issues
Participate in social and/or community activities

Competency: Achieve organizational goals

Competency Builders:

Evaluate personal goals in relation to organizational goals
Monitor progress by evaluating feedback
List responsibilities in relation to organization goals
Accomplish assigned tasks
Exercise responsibility in relation to organizational goals
Set appropriate personal performance standards
Communicate goals with supervisor and peers
Demonstrate knowledge of products and services
Promote organizational image and mission

Competency: Demonstrate positive relations in the workplace

Competency Builders:

Identify personality types of self and other
Identify various management styles
Support employer expectations
Support employer decisions
Accept constructive criticism
Give constructive feedback
Adapt to changes in workplace
List factors to consider before resigning
Write letter of resignation

Competency: **Manage stressful situations**

Competency Builders:

Accept stress as part of daily life
Identify personal and professional factors contributing to stress
Describe physical and emotional responses to stress
Evaluate positive and negative effects of stress on productivity
Identify strategies for reducing stress
Implement strategies to manage stress
Create strategies for developing and maintaining support systems

Competency: **Analyze effects of family on work and work on family**

Competency Builders:

Identify how family values, goals, and priorities are reflected in work place
Identify responsibilities and rewards associated with paid and non-paid work
Identify responsibilities and rewards associated with families
Explain how family responsibilities can conflict with work
Explain how work can conflict with family responsibilities
Explain how work-related stress can affect families
Explain how family-related stress can affect work
Identify family support systems and resources
Identify work-related support systems and resources
Communicate with family regarding work

Competency: **Apply lifelong learning skills**

Competency Builders:

Define lifelong learning
Identify factors that cause need for lifelong learning
Analyze effects of change
Identify reasons why goals change
Describe importance of flexibility and adaptability
Evaluate need for continuing education/training

Competency: Manage professional development

Competency Builders:

Identify career opportunities
Modify career plan
Participate in continuing education/training opportunities
Document continuing education/training
Read profession-related manuals, technical journals, and periodicals
Attend meetings, workshops, seminars, conferences, and demonstrations
Participate in professional organizations
Build personal/professional mentor relationship
Build personal/professional support system
Build professional network
Strengthen communication skills
Strengthen leadership skills
Strengthen management skills

Unit: Teamwork

Competency: Demonstrate knowledge of teamwork

Competency Builders:

Define empowerment
Differentiate work groups and teams
Identify conditions essential to teamwork (e.g., brainstorming)
Explain influence of culture (e.g., corporate, community) on teamwork
Identify appropriate situations for using teams
Define team structures (e.g., cross functional, quality improvement, task force, quality circles)
Identify team building concepts
Describe characteristics and dynamics of teams
Identify characteristics of effective team leaders and members
Identify responsibilities of a valuable team member
Identify methods of involving each member of a team
Explain how individuals from various backgrounds contribute to work-related situations (e.g., technical training, cultural heritage)
Explain the purpose of facilitators
Define consensus
Define reward/recognition system

Competency: Demonstrate teamwork

Competency Builders:

Identify purpose of team and intended goal (include time frames)
Structure team around purpose
Define responsibilities of team members
Contribute to efficiency and success of team
Work toward individual and team milestones
Analyze results of team project
Facilitate a team meeting
Assist team member(s) with problem
Monitor time frame
Stress continuous improvement
Accept failure as part of learning

Competency: Use teamwork to solve problems

Competency Builders:

Identify appropriate situations for using teams
Use problem-solving process in a team setting
Identify quality management processes/techniques
Identify quality assurance processes/techniques
Prepare presentation

Competency: Conduct team meetings

Competency Builders:

Plan agenda
Schedule meeting and location
Invite appropriate personnel
Solicit outside speakers as needed
Assign someone to take minutes
Facilitate introductions
Invite questions and comments and group participation
Focus team on agenda items
Assign appropriate action, time frame and accountability to tasks
Monitor time
Close meeting on time
Publish minutes in timely manner
Set ground rules
Avoid placing individual agendas above the group's agenda

Unit: Professional and Ethical Standards

Competency: Explain professional responsibilities

Competency Builders:

Explain the need for professional and ethical standards
Explain responsibility of the individual to apply ethical standards
Identify responsibility to client(s) or employer(s)
Explain employer's consequences of unprofessional and/or unethical employee behavior
Identify responsibility to self (e.g., professional appearance and limitations) and to profession
Explain importance of conflict resolution in the workplace

Competency: Describe self-managed employees

Competency Builders:

Explain the need for organizing tasks
Explain management-by-objectives
Explain importance of planning, both long-term and short-term
Explain importance of evaluating progress
Explain importance of reporting progress
Explain time management
Explain the benefit of creative brainstorming and innovative thinking

Competency: Describe intellectual property

Competency Builders:

Explain legal ownership of proprietary assets produced by the computing professional
Explain public policy
Explain rights of the originator
Explain rights of the public
Explain patent
Explain copyright
Explain licenses
Explain confidentiality

Competency: Apply professional and ethical standards

Competency Builders:

Identify computing industry's standards
Describe computing industry's code of ethics
Explain various ethics established by computing societies
Apply various ethics established by computing societies

Unit: Economic and Business Principles

Competency: Describe basic economic concepts

Competency Builders:

Identify importance of economic resources
Explain concept of economic resources
Explain importance of economic resources
Explain concept of economic goods and services
Differentiate between economic goods and services
Differentiate between needs and wants
Explain concept of supply and demand
Explain concept of price
Explain how supply, demand, and price are related
Explain concept of private enterprise and business ownership
Explain concept of profit
Explain concept of risk
Explain concept of competition
Explain relationship among risk, competition, and profit

Competency: Conduct training

Competency Builders:

Secure training resources, materials, and equipment
Assess training needs
Train employees
Evaluate progress
Provide appropriate feedback

Competency: Evaluate economic systems

Competency Builders:

Compare types of economic systems
Research free enterprise system
Interpret relationship between government and business
Interpret relationship between labor and management

Competency: Illustrate basic economic principles

Competency Builders:

Illustrate global economic and world market applications
Illustrate economic cycles (e.g., unemployment, recession, inflation, budget deficits)
Illustrate economic activity's affect on business (e.g., financial, competitor indicators, industry)

Competency: Analyze cost and profit influences

Competency Builders:

Identify importance of maximizing quality
Identify importance of maximizing productivity
Contrast specialized training and cross training
Contrast labor and management
Contrast government and business

Competency: Illustrate economic indicators and trends

Competency Builders:

Define gross national product and gross domestic product
Interpret impact of interest rates
Interpret impact of government spending
Interpret impact of seasonal business cycles
Interpret impact of inflation, growth, recession, and unemployment
Interpret impact of national and world events
Interpret impact of the growth of international trade

Competency: Explain basic international trade concepts

Competency Builders:

Explain nature and importance of international trade
Contrast advantages and disadvantages of marketing in international trade
Explain balance of trade concepts
Describe impact of foreign investment

Competency: Explain basic business concepts

Competency Builders:

Identify functions of business
Explain role of management
Explain role of labor
Explain concept of service as a product
Explain role of administration
Explain role of operations
Identify role of company objectives
Identify importance of ethical business practices
Identify types of ownership
Identify components of a business plan

Competency: Summarize business principles

Competency Builders:

Explain business organizations and functions
Describe business reporting and information flow
Map interface of departmental functions
Identify communication channels (e.g., formal, informal)
Explain total quality management (TQM) principles

Competency: Illustrate legal concepts

Competency Builders:

Define legal terminology
Explain business law concepts
Interpret contracts and/or legal documents
Explain relationship of laws and regulations to company contracts, policies, and procedures
Explain laws relating to working conditions, wages and hours, civil rights, social security, disability, and unemployment insurance

Competency: Explain role of marketing

Competency Builders:

Explain aspects of sound business image
Identify purposes of marketing
Identify functions of marketing
Describe effects of marketing
Explain product/service variety
Identify target markets
Define sales potential
Explain pricing strategies
Differentiate advertising campaigns
Explain advantages and disadvantages of advertising agencies
Describe sales incentive programs
Maintain marketing feedback and make appropriate changes
Identify types of marketing strategies and the advantage and disadvantage of each (e.g. phone, mail, person)
Design monitor plan

Competency: Serve customers/clients

Competency Builders:

Identify importance of customer
Identify customer services to provide
Relate to customers in timely fashion
Identify customer needs and wants
Gather complete and accurate information
Apply customer service concepts and terminology
Identify methods for addressing dissatisfied customers

Unit: Customer Relations

Competency: Demonstrate positive relations with customers

Competency Builders:

Identify importance of customers to business
Differentiate between customer needs and wants
Provide prompt and courteous service
Resolve customer inquiries and complaints and/or refer customer to appropriate person
Identify methods of addressing dissatisfied customers

Competency: Perform scheduling functions to meet customers needs

Competency Builders:

Create calendar/schedule
Maintain appointment calendars
Process requests for appointments
Verify appointments
Notify customer of changes in schedule
Manage scheduling conflicts

Unit: Problem Analysis

Competency: Appraise situations

Competency Builders:

Identify concerns
Classify concerns
Set priorities
Identify resolution process
Plan resolution

Competency: Analyze potential problems

Competency Builders:

Identify potential problems
Identify likely causes
Identify preventive actions
Identify contingent actions

Competency: Analyze actual problems

Competency Builders:

Identify deviation
Identify problem and possible causes
Test for probable causes
Verify cause

Competency: Analyze decisions

Competency Builders:

Identify objective(s)
Classify objective(s)
Identify alternatives
Evaluate alternatives
Assess risks
Make final choice

Unit: Project Management

Competency: Explain project management

Competency Builders:

Identify project purpose/goal
Identify project objectives
Identify work breakdown structure (WBS)
Identify resource requirements

Competency: Plan projects

Competency Builders:

Apply responsibility assignment matrix (RAM)
Apply Gantt or bar charts
Apply network diagrams
Apply critical path method (CPM)
Apply project education and review techniques
Apply software programs

Competency: Implement projects

Competency Builders:

Monitor project
Control project
Modify project

Competency: Evaluate projects

Competency Builders:

Analyze performance
Close-out project evaluation
Draw project management conclusions

Unit: Technical Documentation

Competency: **Demonstrate proficiency in technical documentation**

Competency Builders:

Identify parameters
Ask questions
Interpret specifications or drawings
Record process (e.g., flowchart, step-by-step)
Record data
Maintain test logs
Compile cumulative reference/record

Competency: **Demonstrate proficiency in technical report writing**

Competency Builders:

Use data books and cross reference/technical manuals
Identify type of report needed
Compile relevant data
Design applicable charts and graphs
Analyze data
Draw conclusions
Outline reports
Write reports
Present reports

Unit: Basic Personal Computer Concepts

Competency: Explain use of personal computers in business

Competency Builders:

Describe the impact of computer use on individuals and businesses
Identify basic applications of computers in business
Identify automated business systems and electronic media
Identify different types and sizes of computers
Define input, processor, output, and storage units
Identify how PCs integrate with other information technologies (e.g., scanners, mainframes)
Describe impact of computer use on individuals and business
Identify basic applications of computers in business

Competency: Describe personal computer operations

Competency Builders:

Explain how data is stored in main computer memory
Explain how a computer system executes program instruction
Explain electronic storage capacity
Explain electronic units of measure and how they represent data
Identify data storage techniques
Identify types of memory
Explain different types of input and output

Competency: Explain information processing

Competency Builders:

Define operating systems
Describe the difference between data files and program files
Demonstrate knowledge of system commands
Define software types and functions
Describe basic disk operation and care
List business applications of software package
List advantages and disadvantages of integrated and dedicated software

Competency: Demonstrate computer literacy

Competency Builders:

Identify computer components
Identify parallel versus serial ports
Explain differences between conventional, expanded, and extended memory
Identify use of storage media
List commands that affect disk operation
Use disk operating system to format disks
Originate directories and subdirectories
Explain common configuration variables
Explain device driver concepts
Demonstrate commands that open, close, copy, delete, and rename files on disk
Keyboard document(s) using computer

Unit: Packaged PC Applications

Competency: Explain software applications

Competency Builders:

Describe need for application software
Describe different types of software applications
Explain advantages and disadvantages of various software applications
List software sources
Explain copyright laws for software

Competency: Explain spreadsheet packages

Competency Builders:

Define spreadsheet
Demonstrate knowledge of basic spreadsheet terminology
Define components of spreadsheets
Describe implementation of spreadsheet operations in business scope

Competency: Perform word processing functions

Competency Builders:

Define word processing terminology
Explain functions of word processing software
Explain word processing applications
Use appropriate reference materials
Keyboard efficiently by touch
Use mouse
Initialize diskette
Prepare backup file
Maintain backup file
Update spelling dictionary and spell check
Perform document functions (e.g., locate, rename, delete, save, retrieve, copy)
Perform formatting functions (e.g., set margins and tabs, center, underline, bold, cut and paste)
Use edit features
Use sort features
Add page numbers to document
Add headers and footers
Print files, pages, screens and blocks of text
Verify accuracy of output
Create a document
Save a document to disk
Retrieve a document from disk
Edit an existing document
Describe word-wrap
Print a document
Create glossary file
Store boilerplate material
Compose documents at keyboard
Tabulate multiple columns
Prepare new documents from existing ones
Merge selected copy with new information
Prepare various types of table options
Index text
Format text
Integrate database, spreadsheet and graphic files
Convert documents from one system to another
Demonstrate use of computer thesaurus
Use multimedia techniques/resources

Competency: Use spreadsheet packages

Competency Builders:

Use spell check
Execute an electronic spreadsheet
Enter data, formulas, and functions
Differentiate between labels and numbers
Compare absolute and relative addressing
Speculate using "what if..." questions
Sequence keystrokes in the creation of a macro
Create database within spreadsheet and perform data query functions
Move around in spreadsheet and correct errors
Format spreadsheet
Create graphs
Print graphs
Save previously saved files
Load previously saved files
Replicate cells using copy commands
Use electronic spreadsheet to complete business application
Use spreadsheet to plan financial strategies
Prepare spreadsheet
Use multimedia techniques/resources

Competency: Explain database packages

Competency Builders:

Define database
Explain terms used in database systems
Describe common functions of database systems

Competency: Use database packages

Competency Builders:

Use database package to create, input, edit, and display fields and records
Analyze structure of database files
Perform calculations with a database file
Alter structure of database file
Sort records based on multiple fields
Identify advanced database technology
Use appropriate reference materials
Create relational database
Enter elements into database
Proofread database
Edit database
Design report formats
Apply database management system (DBMS) commands
Print reports using data from multiple databases
Use database files with other application software
Verify accuracy of output (e.g., edit reports)
Use multimedia techniques/resources

Competency: Explain function of shared environments

Competency Builders:

List purposes of a network environment
Define electronic mail
Identify advantages and disadvantages of electronic mail
Describe impact of local and wide area networks on mail delivery

Competency: Use a shared environment

Competency Builders:

Compose electronic messages
Send electronic messages using appropriate format
List categories of electronic mail service
Transmit document using electronic mail system
Monitor electronic mail

Competency: **Manage software packages**

Competency Builders:

Install software packages
Upgrade software packages
Document installation of software packages
Convert data files

Competency: **Perform computer business graphics**

Competency Builders:

Define purpose and types of graphics
Use appropriate reference materials
Create graphics
Proofread graphics
Edit graphics
Save graphics
Retrieve graphics
Print graphics to various output devices
Verify accuracy of output
Use graphic functions to create files, input data, process data, and produce output
Use graphics files with other application software

Competency: **Use graphic user interface (GUI) techniques**

Competency Builders:

Explain multi tasking environment
Setup data exchange between two different applications
Setup an object link between two different applications
Explain the use of dynamic link libraries

Unit: General Office Functions

Competency: Maintain a safe working environment

Competency Builders:

Comply with company safety and health rules and regulations
Use appropriate reference materials
Use equipment correctly
Use appropriate actions during emergencies
Maintain a clean and orderly work area

Competency: Maintain work flow

Competency Builders:

Organize work
Prioritize work
Apply time-management techniques
Complete assigned tasks in a timely manner
Coordinate with team members as needed

Competency: Demonstrate positive relations with customers/clients

Competency Builders:

Identify importance of repeat customers to business
Identify customer needs and wants
Provide prompt and courteous service
Resolve customer inquiries and complaints and/or refer customer to appropriate person

Competency: **Perform telephone operations**

Competency Builders:

Use appropriate reference materials
Display telephone etiquette
Operate equipment
Route calls
Listen assertively
Verify information
Screen calls
Record messages
Relay messages timely
Place calls
Log long-distance calls
Create telephone directories
Maintain telephone directories
Organize teleconferences
Use voice mail/messaging systems

Competency: **Use facsimile machine**

Competency Builders:

Explain how a facsimile machine operates
Record information regarding material being sent
Operate facsimile
Verify to sender that process has been completed
File copy of facsimile order
Maintain supplies for facsimile use
Log maintenance needs regarding facsimile

Competency: **Assist visitors**

Competency Builders:

Greet visitors
Screen visitors
Maintain visitor log
Make appropriate introductions
Portray professional image

Competency: Perform scheduling functions

Competency Builders:

Create calendar/schedule
Maintain appointment calendars
Process requests for appointments
Verify appointments

Competency: Use job-related reference materials

Competency Builders:

Identify reference materials
Assemble reference materials
Abstract information from reference materials
Compile data

Competency: Coordinate meeting arrangements

Competency Builders:

Make arrangements with meeting planners
Distribute agenda
Assemble relevant information
Notify participants
Confirm arrangements

Competency: Generate minutes

Competency Builders:

Record appropriate notes
Gather materials
Prepare minutes
Distribute minutes
File minutes

Competency: Coordinate travel plans

Competency Builders:

Check travel resources
Inquire about traveler's preferences
Arrange necessary transportation and lodging
Obtain passports and/or visas
Confirm arrangements
Prepare itineraries
Distribute itineraries
Alter arrangements

Competency: Perform mail functions

Competency Builders:

Identify various mail and delivery services
Process incoming mail
Distribute mail
Operate equipment
Process outgoing mail

Competency: Maintain office supplies

Competency Builders:

Prepare cost justification for purchasing supplies
Order supplies
Verify supply order against supplies
Store and secure supplies
Distribute supplies
Inventory supplies
Prepare inventory reports

Competency: Perform copying functions

Competency Builders:

Use appropriate reference materials
Operate equipment
Collate documents
Maintain equipment
Identify copying methods
Identify best copying method for task
Identify characteristics of paper stock
Keep appropriate records
Identify appropriate copyright applications

Competency: Maintain filing system

Competency Builders:

Give reasons for keeping records
Identify types of records needed
Develop proper techniques/procedures for maintaining records
Use appropriate reference materials
Describe procedure for initial inventory of records
Organize files
Index files
File information
Retrieve information
Consolidate files
Archive or destroy files
Secure files for legality and confidentiality
Follow retention schedule
Create new files
Update files
Prepare materials for filing
Sort documents
Apply cross-referencing and logging systems
Store documents
Locate documents

Competency: **Maintain hardware and software**

Competency Builders:

Use appropriate reference materials
Evaluate hardware and software
Recommend hardware and software
Schedule routine hardware maintenance
Update software
Report malfunction(s)
Maintain usage logs
Inventory hardware and software

Unit: Office Technology

Competency: Use telecommunications

Competency Builders:

Define the role of telecommunications in business
Use appropriate reference materials
Operate telephone systems
Operate fax machines

Competency: Perform basic word processing functions

Competency Builders:

Create glossary file
Store boilerplate material
Compose documents at keyboard
Tabulate multiple columns
Prepare new documents from existing ones
Merge selected copy with new information
Prepare various types of table options
Index text
Format text
Integrate database, spreadsheet, and graphics files
Convert documents from one system to another
Demonstrate use of computer thesaurus

Competency: Perform transcription functions

Competency Builders:

Identify various types of dictation/transcription equipment
Keyboard documents
Proofread documents
Edit documents
Save documents
Retrieve documents
Print documents

Competency: Use computerized filing system

Competency Builders:

Identify uses for electronic filing system
List advantages and disadvantages of electronic filing
Retrieve information from filing system
Store records electronically
Duplicate records electronically
Transmit records electronically
Maintain financial records

Competency: Perform database functions

Competency Builders:

Identify advanced database technology
Use appropriate reference materials
Create relational database
Enter elements into database
Proofread database
Edit database
Design report formats
Apply database management system (DBMS) commands
Print reports using data from multiple databases
Use database files with other application software
Verify accuracy of output

Competency: Perform desktop publishing functions

Competency Builders:

Define desktop publishing
Explain word processing functions in desktop publishing
Use appropriate reference materials
Use desktop publishing terms
Use desktop publishing software
Use graphic design and layout functions of desktop publishing
Design publications
Merge word-processing, graphics, database, and spreadsheet files
Proofread documents
Edit documents
Save documents
Retrieve documents
Print documents using various output devices

Competency: Perform computer business graphics

Competency Builders:

Define purpose and types of graphics
Use appropriate reference materials
Create graphics
Proofread graphics
Edit graphics
Save graphics
Retrieve graphics
Print graphics to various output devices
Verify accuracy of output
Use graphic functions to create files, input data, process data, and produce output
Use graphics files with other application software

Unit: General Accounting Functions

Competency: Apply arithmetical accounting skills

Competency Builders:

Compute cash discounts for various terms
Compute trade discounts
Compute extension, sales tax, and totals of sales slips
Compute markups and markdowns
Calculate rates of trade and cash discounts
Calculate unit prices given quantity prices
Calculate costs of portions of units
Solve problems involving fractions, decimals, and percentages
Solve commission problems
Solve finance-charge problems
Solve annual percentage rate problems

Competency: Apply accounting principles

Competency Builders:

Define accounting terminology
Define journals and ledgers
Identify basic accounting principles
Identify basic accounting applications
Identify computer accounting applications
Identify financial control procedures
Explain increases and decreases in accounts
Explain periodic reporting procedures
Prepare income statement
Prepare balance sheet columns
Prepare cash flow statement
Interpret balance sheets
Interpret income statements
Interpret cash-flow analysis statements

Competency: Perform manual accounting functions

Competency Builders:

Explain use of record keeping in relation to business and economic applications
Use appropriate reference materials
Analyze transactions
Use "T" accounts to label increases, decreases, and balances
Record transactions
Process receivables
Monitor expense accounts
Process payables
Prepare budgets
Process purchases
Prepare comparative (actual vs. budget) income statement

Competency: Perform automated accounting functions

Competency Builders:

Use appropriate reference materials
Operate equipment
Key data on numeric keyboard
Import or download data from computer records
Scan data from various media
Use integrated software package for simulation of accounting cycle
Set up chart of accounts for general ledger
Set up accounts payable and accounts receivable ledgers
Add accounts to general and subsidiary ledgers
Input account balances
Enter journal transactions
Process journal transaction
Prepare trial balance
Verify data and correct errors
Generate reports
Proofread accounting records and statements
Edit accounting records and statements
Save accounting records and statements
Retrieve accounting records and statements
Print accounting records and statements

Competency: **Perform spreadsheet functions**

Competency Builders:

Explain computer spreadsheet analysis
Use appropriate reference materials
Operate equipment
Create or format spreadsheet
Enter formulas
Move cells and ranges
Enter data on spreadsheet
Import or download data to spreadsheet
Apply data sort, data query, data fill, and data distribution
Export spreadsheet files to word processing, graphics and database files
Import spreadsheet files to word processing, graphics and database files
Proofread spreadsheet data
Edit spreadsheet data
Verify accuracy of output
Save spreadsheet
Retrieve spreadsheet
Print spreadsheet
Use spreadsheet functions to create files, input data, process data, and produce output
Use spreadsheet files with other application software

Competency: Perform payroll functions

Competency Builders:

Use appropriate reference materials
Collect payroll data
Process payroll
Comply with company policies and procedures
Comply with government and legal requirements
Maintain records and forms
Monitor personnel costs

Competency: Perform banking functions

Competency Builders:

Use appropriate reference materials
Prepare checks, deposit slips, and withdrawal slips
Maintain checkbook
Balance checkbook
Maintain petty cash
Balance petty cash
Explain automated banking transactions
Prepare banking records
Maintain banking records

Competency: Process cost accounting information

Competency Builders:

Define cost accounting, direct materials, direct labor and overhead
Define cost allocation methods
Identify source documents
Compute direct materials by job or process
Compute direct labor by job or process
Compute overhead rates to apply to jobs or processes
Compute cost of goods produced
Compute cost of goods sold
Journalize cost of goods produced and sold entries
Post cost of goods produced and sold entries
Compute cost of inventories
Prepare cost production reports
Prepare related records of job or process costs

Competency: Process end-of-fiscal-period information

Competency Builders:

Prepare worksheet
Prepare trial balance
Foot ledger accounts and compute balances
Prove equality of debits and credits
Locate errors
Record adjustments
Make appropriate extensions
Journalize basic adjusting, closing, and reversing entries
Post basic adjusting, closing, and reversing entries
Prepare basic income statement
Prepare basic balance sheet
Prepare basic cash flow statement

Unit: Specialized Accounting Functions

Competency: Process purchase orders

Competency Builders:

Identify source documents
Verify purchase requisitions
Prepare purchase orders and related documents/records
Prepare receiving reports

Competency: Process purchase invoices

Competency Builders:

Verify invoices against purchase orders and receiving reports
Check invoice calculations
Journalize purchase invoice entries
Post purchase invoice entries

Competency: Process purchase returns and allowances

Competency Builders:

Verify return of goods
Issue debit memorandums
Journalize purchase returns and allowance entries
Post purchase return and allowance entries

Competency: Process accounts payable

Competency Builders:

Identify source documents
Journalize payable entries
Post payable entries
Maintain subsidiary records
Reconcile subsidiary records to accounts payable
Prepare schedule of accounts payable

Competency: Process purchase payables and payments

Competency Builders:

Verify invoices, vouchers, and/or interoffice memorandums for payment
Identify purchase discounts
Prepare checks or electronic transfers
Mark source documents paid
Journalize payment entries
Post payment entries
Adjust subsidiary records

Competency: Process notes and interest payable

Competency Builders:

Identify source documents
Identify appropriate entries for notes payable
Compute payment of notes payable and interest
Record payment of notes payable and interest
Journalize note payables entries
Post note payables entries

Competency: Process invoices and receivables

Competency Builders:

Identify source documents
Verify sales invoices
Journalize sales invoice entries
Post sales invoice entries
Maintain subsidiary records

Competency: Process sales returns and allowances

Competency Builders:

Verify sales returns and allowances
Prepare credit memorandums
Journalize sales returns and allowance entries
Post sales return and allowance entries
Adjust subsidiary records

Competency: Process uncollectible accounts

Competency Builders:

Prepare schedule of aged accounts receivable
Apply company policies and procedures to determine uncollectibles
Prepare related documents
Journalize uncollectible account entries
Post uncollectible account entries
Adjust subsidiary records

Competency: Process collections

Competency Builders:

Identify due dates for various discount terms
Compare receipts with amount due
Verify checks, money orders, credit card receipts, and cash
Prepare cash proofs
Prepare deposits
Verify sales discounts
Prepare related documents
Journalize receipt entries
Post receipt entries
Adjust subsidiary records

Competency: Process notes and interest receivables

Competency Builders:

Identify source documents
Identify appropriate entries for notes receivable
Compute and record principal and interest of notes receivable entries
Journalize notes receivable entries
Post notes receivable entries

Competency: **Perform checking account functions**

Competency Builders:

Issue checks
Keep check records
Journalize entries
Post entries
Reconcile bank statement
File checks and deposit slips

Competency: **Maintain petty cash fund**

Competency Builders:

Set up petty cash fund
Pay petty cash vouchers
Reconcile petty cash fund
Replenish petty cash fund
Journalize petty cash transaction entries
Post petty cash transaction entries

Competency: **Process employee payroll records**

Competency Builders:

Obtain required employee forms
Set up employee payroll records
Update employee earnings records
Update employee benefits records
Prepare payroll distribution forms
Process employee time information

Competency: Process payroll

Competency Builders:

Calculate regular and overtime hours
Compute gross earnings
Compute deductions
Compute net pay
Prepare voucher checks
Prepare payroll checks
Journalize payroll entries
Post payroll and deduction entries

Competency: Process employer payroll taxes

Competency Builders:

Apply payroll laws and regulations
Prepare required tax deposits/payments
Prepare payroll tax returns as required
Prepare employee tax forms and reports as required
Journalize employer's payroll tax entries
Post employer's payroll tax entries
Post recorded liability for payroll tax entries
Post withholding and payroll taxes

Competency: Process accruals and deferrals

Competency Builders:

Define accruals and deferrals
Calculate amounts to be accrued and deferred
Journalize accrued and deferred liability and revenue entries
Post accrued and deferred liability and revenue entries
Journalize reversing entries as required
Post reversing entries

Competency: **Use financial statements to make business decisions**

Competency Builders:

Prepare balance sheet
Prepare income statement
Prepare cash-flow analysis
Prepare break-even analysis
Prepare budgets
Prepare comparative financial statement
Prepare cost and revenue analysis
Interpret financial statements
Make financial recommendations

Competency: **Update value of plant and equipment assets**

Competency Builders:

Differentiate between revenue and capital expenditures
Define depreciation methods
Calculate depreciation
Journalize plant and equipment asset entries
Post plant and equipment asset entries
Journalize depreciation entries
Post depreciation entries
Record disposition of plant assets by selling, discarding, and trading
Post disposal of plant and equipment asset entries

Unit: Computer Operations

Competency: Operate computer systems

Competency Builders:

Define job, batch, and job step
Describe data requirements
Use appropriate reference materials
Perform power-up and log-on procedures
Demonstrate basic programming skills
Use console device to interact with and respond to system messages
Secure supplies and resources
Follow processing procedures for each application/job
Run application/job
Describe scheduling priority
Describe transmittal form and transmittal log
Develop an audit trail
Handle materials and equipment in a responsible manner
Use electronic data interchange (EDI)

Competency: Maintain computer systems

Competency Builders:

Monitor system status and performance
Run diagnostics
Report computer system malfunction(s)
Report software malfunction(s)
Fix recoverable problems
Maintain security
Maintain computer log
Perform backup procedure(s)
Perform preventive maintenance
Follow log-off and power-down procedure(s)
Follow equipment maintenance procedures
Follow quality control procedures
Describe operator duties and job scheduling

Competency: Maintain security requirements

Competency Builders:

Apply business ethics
Follow security rules, regulations, and codes
Implement security procedures
Document security procedures
Perform security checks

Competency: Explain operation of peripheral devices

Competency Builders:

Identify peripherals and operating requirements of each
Identify primary devices used for personal computer auxiliary storage
Describe how data is stored on diskettes and hard drives
List speed and storage capacities of computer auxiliary storage devices
Describe attributes of diskettes and hard disks regarding speed and storage capacity
List types of disk storage used with large computer systems
Define role of tape storage in relation to personal and large computers
Describe security issues
Explain purpose of input devices (e.g., keyboard, mouse, scanners, pens, bar code readers, credit/debit/smart cards, voice, video, gloves, joysticks)
Describe operation of output devices (e.g., voice, speaker output devices, printers, plotters, printer sharing units, SCSI interface, video display)
Describe operation of multimedia (e.g., video, audiosound)
Describe operation of storage devices (e.g., tape, disk, CD-ROM)

Competency: Operate peripheral devices

Competency Builders:

Use appropriate reference materials
Load media devices
Start media devices
Unload media devices
Import, edit, and export video and audio
Set up print devices
Operate scanner devices
Operate print devices
Maintain print devices
Monitor peripheral equipment operations
Perform routine maintenance on peripheral devices
List appropriate control procedures
Demonstrate output processing, bursting, decollating, splitting, and shredding
Transmit via modem
Receive via modem
Search a CD-ROM library
Print information from a CD-ROM library
Describe device driver

Competency: Store media

Competency Builders:

Identify need for data library
Use appropriate reference materials
Retrieve stored media (e.g., on-line, off-line, permanent, off-site)
File stored media (e.g., on-line, off-line, permanent, off-site)
Initialize media
Catalog media
Maintain supplies
Maintain media library
Maintain backup records
Maintain company and/or government standards for media security
Maintain archives of company records required by policy or law

Competency: Maintain microcomputers

Competency Builders:

Use appropriate reference materials
Install PC
Change hardware
Set up system configuration
Install software packages
Respond to system messages
Run software applications
Back up systems
Restore systems
Report computer malfunction(s)
Report software malfunction(s)
Perform preventative maintenance

Competency: Explain operating systems

Competency Builders:

Identify operating systems and their attributes
Describe how commands handle tasks in operating systems
Describe various input/output systems
Describe the purpose of operating system utilities
Differentiate between a compiler and an interpreter
Describe the processing that occurs when an interpreter is used
Describe the processing that occurs when a compiler is used

Unit: Network Operations

Competency: Explain communication standards

Competency Builders:

Identify the seven layers of the International Organization Standard's Open System Interconnection (OSI) Model
Describe each OSI layer, including their interconnectivity
Identify software standards for subnet, presentation layers, and file servers

Competency: Describe network structures

Competency Builders:

Differentiate topologies (e.g., hierarchical, ring, star)
Differentiate architecture(s)
Explain layering
Describe protocols (e.g., TCP/IP, IPX/SPX, etc..)
Describe frame types (e.g., SNA<802.3, 802.5)
Define local area network
Define different types of LANs
Differentiate between network operating systems and data distribution systems
Identify advantages and disadvantages of various LAN operating systems
List duties of LAN supervisor

Competency: Explain network transmission and media

Competency Builders:

Explain signals
Explain patterns
Explain error detection and correction
Explain speed of transmission
Explain use of media
Explain use of equipment
Explain role of network manager

Competency: **Explain network connectivity and interoperability**

Competency Builders:

Identify equipment connecting devices
Differentiate between sync and async devices
Identify software connecting devices
Identify media connecting devices
Identify type of interoperability (e.g., peer-to-peer, peer-to-host)
Identify problems of mixed vendor network implementation
Describe internetworking solutions
Describe cabling schemes and alternatives
Identify network topologies
List pros and cons of network interface cards
List pros and cons of network servers
Explain why internetting is useful or necessary
Describe levels at which internetting can occur
Identify protocols used for remote interconnecting and when each should be used
List common pitfalls when networking computers
Identify method used to evaluate emulators
Describe gateways (e.g., mainframe, protocol)

Competency: **Describe network operating systems**

Competency Builders:

Identify responsibilities of a network operating system
Explain installation procedure for network operating systems
Explain commands needed to use network operating systems
List characteristics of a network interface card (NIC)
Define criteria used to describe network servers
Define criteria used to evaluate network operating systems

Competency: **Describe potential networking problems with applications software**

Competency Builders:

Describe potential hard disk compatibility problems
Differentiate between site multi user and single user licenses
Describe necessary precautions included in programs used on networks

Competency: Explain network management

Competency Builders:

List steps in mapping a network
Explain why files must be organized according to owners, users, and privileges
Describe common standards for setting up and naming files
List criteria used to determine if a file should be network accessible
Identify methods to increase performance
Define hierarchical directory
Explain methods used to determine how many servers should be used
State reasons for channel and cable bottlenecks

Competency: Explain network security

Competency Builders:

Explain need for data protection
Identify common backup devices
Explain criteria for selecting a tape system
Differentiate between hard and soft errors
Contrast streaming and file-by-file backup systems
Explain process for archiving files
Explain necessity for network security
Identify levels of network sedulity and reasons for their existence

Competency: Explain installation procedures

Competency Builders:

Explain why an installation log is necessary
Identify methods of distributing cable, including modeling examples
Identify problems associated with cable installation
Describe types of cable, cable connectors, and grounding techniques
Explain cable testing and tolerance levels
Identify sources of interference and include methods to overcome each

Competency: Use network knowledge

Competency Builders:

Use electronic/voice/multi-media mail
Share files
Use dial-in access
Make backups
Share resources
Explain software control
Apply security and authentication

Competency: Apply network operations

Competency Builders:

Assess user needs to determine which LAN operating systems to use
Demonstrate applications used on LANs
Describe how the network protocols work together
Operate the system in a multi-user environment
Demonstrate knowledge of various networks and compatibility
Differentiate among various topologies
Identify which network operating system to use
Build synchronous transmission circuit using a modem
Build synchronous transmission circuit using a modem
Connect PCs to form a network
Connect two PCs networks
Perform file to file copy in a PC network
Implement print queue in a PC network
Configure file server in a PC network
Connect PC to mini or mainframe
Link mixed vendors (e.g., PC to Mac)
Interconnect via backbone network
Build small ethernet or token ring network

Competency: Administer network

Competency Builders:

Use appropriate reference materials
Apply current LAN concepts and technology
Attach computers and peripherals to LAN
Change computer hardware
Set up system configuration
Install LAN manager software
Install software packages
Respond to system messages
Troubleshoot system
Run software applications
Back up and restore systems
Perform system analysis
Use security procedures
Perform preventative maintenance
Select access control and security
Outline resource management
Install cabling
Install network
Analyze network operations
Check physical and virtual connections
Modify network
Apply standards
Acquire licensing
Plan disaster recovery
Address protocols (e. g., ethernet, token ring, Arcnet)
Monitor network activity/performance

Competency: Perform network maintenance and diagnostics

Competency Builders:

Execute network diagnostics program for software
Execute network diagnostics program for hardware
Apply standard and protocols
Document action(s) taken

Unit: Basic Mainframe Concepts

Competency: Describe mainframe operations

Competency Builders:

Identify types of mainframe memory
Identify data storage techniques used by mainframe operation
Explain how data is stored in mainframe computer memory
Explain how a mainframe computer system executes program instruction
Explain mainframe storage capacity

Competency: Describe interface techniques

Competency Builders:

Identify elements of mainframe user interface
Identify mainframe hardware components and their advantages and disadvantages
Trace evolution of user interface software for mainframe
Illustrate various forms of mainframe menus
Describe mainframe graphical user interface (GUI)

Competency: Explain information processing cycle

Competency Builders:

Define mainframe operating systems
Define data processing terminology
Describe the difference between data files and program files
Differentiate between internal and external commands
Differentiate among interactive, transaction-oriented, and batch processing
Describe processing capabilities of computer operations
Specify roles of systems, procedures, and personnel in mainframe information processing
Explain functions of input, output, revision, distribution, storage, and reproduction

Competency: Explain purpose of mainframe database systems

Competency Builders:

Define mainframe database
Explain terms used in mainframe database systems
Describe common function of mainframe database systems

Competency: Use mainframe database system

Competency Builders:

Enter data into database and sort
Enter data into database and retrieve
Enter data into database and select
Prepare formatted business forms using mainframe database

Unit: Supervision

Competency: **Manage human resources**

Competency Builders:

Apply appropriate management and leadership styles
Use foresight to anticipate and manage change
Display managerial and supervisory skills
Apply human relations skills
Develop management objectives
Create and/or implement organizational charts
Clarify company policies and procedures
Maintain office procedures manual(s)
Establish office procedures
Prepare and/or monitor budgets
Prepare managerial reports
Analyze production reports
Maintain appropriate work environment
Conduct tours
Monitor progress
Prepare and communicate productivity reports
Provide and/or coordinate training for new policies
Troubleshoot office problems
Communicate performance expectations
Counsel employees about career objectives
Maintain performance records
Adhere to company policies regarding discrimination and harassment
Address employees regarding disciplinary action(s)
Recommend employees for promotion
Explain procedure for handling grievances
Evaluate employee performance
Document personnel issues

Competency: Manage projects

Competency Builders:

Conduct needs analysis
Set priorities
Research information
Develop goals and objectives
Develop strategic plan
Develop project budget
Apply forecasting techniques
Apply prioritizing techniques
Schedule work assignments
Collect data
Analyze data
Act on data
Monitor project progress
Meet project timelines
Monitor budget
Apply quality measures and counter measures

Competency: Manage work flow

Competency Builders:

Plan office layout for workflow
Create organizational charts
Communicate operating policies and procedures
Maintain office procedures manual(s)
Identify production standards
Interface with other departments
Prioritize work
Assign work
Delegate work
Provide instruction
Monitor progress
Complete productivity and/or managerial reports
Complete assigned tasks in a timely manner
Coordinate with team members

Competency: Conduct staff/team meetings

Competency Builders:

Plan meeting
Set agenda
Set and schedule meeting
Schedule meeting room
Invite appropriate personnel
Identify need for outside speakers
Assign someone to take minutes
Make introductions
Invite questions and comments, and group participation
Focus on agenda items, but maintain issues list as they arise
Decide appropriate action, time frame, and accountability to tasks
Monitor time
Close meeting on time
Publish minutes in timely manner to appropriate persons

Competency: Conduct training

Competency Builders:

Secure training resources, materials, and equipment
Assess training needs
Train employees
Evaluate progress
Provide appropriate feedback
Document training participation

Computer Programmer/Analyst

NOTE: Each TCP should respond to labor market demands in your area. Therefore, the following pages should be examined before being selected for use in TCP Part I (See "The TCP Process" Tab). For example, some units may not apply to your situation, nor might all the competencies within each unit be appropriate. Also, note that several units appear within each of the twelve occupations in this binder. Those "common" units should only appear once in the draft competency list for TCP Part I if you are compiling several occupations in a cluster format (See "TCP Matrix" Tab).

Units to Consider:	Page
Employability Skills	CP-3
Professionalism	CP-8
Teamwork	CP-12
Professional and Ethical Standards	CP-14
Economic and Business Principles	CP-16
Customer Relations	CP-20
Problem Analysis	CP-21
Project Management	CP-22
Technical Documentation	CP-23
Basic Personal Computer Concepts	CP-24
Packaged PC Applications	CP-26
General Office Functions	CP-31
Office Technology	CP-37
General Accounting Functions	CP-40
Specialized Accounting Functions	CP-45
Computer Operations	CP-51
Software Methodology	CP-55
Operating Systems	CP-57
Application Programming and Design	CP-61
Network Operations	CP-66
Basic Mainframe Concepts	CP-71
Computer Hardware Design	CP-73
Database Modeling and Design	CP-77
Small Business Management	CP-78
Supervision	CP-84

DON'T FORGET TO INSERT YOUR ACADEMIC COMPETENCIES HERE

Communications Literacy, Mathematics Literacy, Science Literacy, and Technology Literacy have been removed so that you may insert your own academic lists here.

COMMUNICATIONS LITERACY

(e.g., Reading, Writing, Speaking, and Listening)

MATHEMATICS LITERACY

(e.g., Algebra, Geometry, Trigonometry, Calculus)

SCIENCE LITERACY

(e.g., Physical Science, Environmental Science, Agriscience,
Biology, Chemistry, Physics, Anatomy & Physiology)

TECHNOLOGY LITERACY

**(i.e., the impact of technology on humans and
their home, work, and play environments)**

Unit: Employability Skills

Competency: Develop a career plan

Competency Builders:

Identify current interests and aptitudes
Identify common barriers to employment
Describe strategies to overcome employment barriers
Locate resources for finding employment
Research job trends
Identify career options
Identify advantages and disadvantages of career options (in addition to other than monetary)
Identify job requirements
Investigate education/training opportunities
Evaluate personal strengths and weaknesses

Competency: Prepare for employment

Competency Builders:

Identify traditional and non-traditional employment sources
Identify present and future employment opportunities (by geographic location)
Research job opportunities, including non-traditional careers
Compare salary ranges and benefit packages
Compile occupational profile
Identify rights and responsibilities of equal employment opportunity laws
Design resume and cover letter
Target resume
Secure references
Investigate generic and specific employment tests (e.g., civil service exam; drug screening)
Use follow-up techniques to enhance employment potential
Demonstrate legible written communication skills using correct grammar, spelling, punctuation, and concise wording
Describe methods for handling illegal questions on job application forms and during interviews
Write letter of application
Research prospective employer and services performed
Explain critical importance of personal appearance, hygiene, and demeanor
Interpret job description
Demonstrate appropriate interview question and answer techniques
Demonstrate methods for handling difficult interview questions
Evaluate job offers
Write letter of acceptance
Write letter of declination
Demonstrate good listening skills
Ask for the job tactfully
Participate in extracurricular activities (e.g., student government, community projects,)

Competency: Evaluate the importance of self-esteem as an employability skill

Competency Builders:

Identify factors that affect self-esteem
Compare effects of low self-esteem and high self-esteem
Identify strategies to promote positive self-esteem

Competency: Demonstrate job retention skills

Competency Builders:

Identify employer expectations regarding job performance, work habits, attitudes, personal appearance, and hygiene
Exhibit appropriate work habits and attitude
Demonstrate ability to set priorities
Identify behaviors to establish successful working relationships
Identify alternatives for dealing with harassment, bias, and discrimination based on race, color, national origin, sex, religion, handicap, or age
Identify opportunities for advancement
List reasons for termination
List consequences of being absent frequently from job
List consequences of frequently arriving late for work
Demonstrate interpersonal relations skills (i.e., verbal and written)
Demonstrate negotiation skills
Demonstrate teamwork
Follow chain-of-command
Exhibit appropriate job dedication

Competency: Demonstrate knowledge of work ethic

Competency Builders:

Define work ethic
Identify factors that influence work ethic
Differentiate law and ethics
Describe how personal values are reflected in work ethic
Describe how interactions in the workplace affect personal work ethic
Describe how life changes affect personal work ethic

Competency: **Exhibit appropriate work ethic**

Competency Builders:

Use time-management techniques
Avoid personal activity during work hours
Attend work as scheduled
Adhere to company and/or governmental policies, procedures, rules, and regulations
Exercise confidentiality
Demonstrate appropriate human relations skills
Adhere to rules of conduct
Accept constructive criticism
Offer constructive criticism
Take pride in work
Resolve conflict
Manage stress
Avoid sexual connotations and harassment
Adjust to changes in the workplace
Demonstrate punctuality
Assume responsibility for personal decisions and actions
Take responsibility for assignments
Follow chain-of-command

Competency: **Apply decision-making techniques**

Competency Builders:

Identify decision to be made
Identify ownership of decision to be made
Identify possible alternatives and their consequences
Make decisions based on facts, legality, ethics, goals, and/or culture
Apply time factor(s)
Present decision to be implemented
Evaluate decision made
Take responsibility for decision

Competency: Apply problem-solving techniques

Competency Builders:

Identify problem
Select appropriate problem solving tools/techniques
Identify root problem cause(s)
Track root problem cause(s)
Identify possible solutions and their consequences (e.g., long term, short term, crisis)
Use resources to explore possible solutions to problem
Contrast advantages and disadvantages of each solution
Identify appropriate action
Evaluate results
Identify post-preventive action

Competency: Exhibit characteristics for job advancement

Competency Builders:

Display positive attitude
Demonstrate knowledge of position
Perform quality work
Adapt to changing situations and technology
Demonstrate capability/responsibility for different positions
Identify characteristics of effective leaders
Identify opportunities for leadership in work place/community
Demonstrate initiative to affect change in workplace
Participate in continuing education/training program
Responds appropriately to criticism from employer, supervisor, or other employees
Exhibit awareness of corporate culture
Prepare for job setbacks
Exhibit continual growth based on performance evaluation
Set realistic goals

Unit: Professionalism

Competency: Project professional image

Competency Builders:

Define professionalism
Exhibit professional appearance
Exhibit professional manners
Project professional attitude
Identify individuals' vital role in organization
Exhibit proper etiquette in professionally-related situations

Competency: Achieve individual and professional goals

Competency Builders:

Set flexible, realistic, and measurable goals
Identify potential barriers to achieving goals
Identify strategies for addressing barriers to goal achievement
Breakdown long-term goals into short-term goals
Prioritize goals
Commit to goals
Adjust goals
Obtain support for goals
Reward goal achievement

Competency: Manage personal finances

Competency Builders:

Explain need for personal management records
Balance checkbook
Identify tax obligations
Analyze how credit affects financial security
Compare types and methods of investments
Compare types and methods of borrowing
Compare types and methods of insurance
Compare types of retirement options/plans
Identify discriminatory vs. non-discriminatory expenditures

Competency: Support community well-being

Competency Builders:

Identify environmental, educational, and social issues
Participate in social and/or community activities

Competency: Achieve organizational goals

Competency Builders:

Evaluate personal goals in relation to organizational goals
Monitor progress by evaluating feedback
List responsibilities in relation to organization goals
Accomplish assigned tasks
Exercise responsibility in relation to organizational goals
Set appropriate personal performance standards
Communicate goals with supervisor and peers
Demonstrate knowledge of products and services
Promote organizational image and mission

Competency: Demonstrate positive relations in the workplace

Competency Builders:

Identify personality types of self and other
Identify various management styles
Support employer expectations
Support employer decisions
Accept constructive criticism
Give constructive feedback
Adapt to changes in workplace
List factors to consider before resigning
Write letter of resignation

Competency: **Manage stressful situations**

Competency Builders:

Accept stress as part of daily life
Identify personal and professional factors contributing to stress
Describe physical and emotional responses to stress
Evaluate positive and negative effects of stress on productivity
Identify strategies for reducing stress
Implement strategies to manage stress
Create strategies for developing and maintaining support systems

Competency: **Analyze effects of family on work and work on family**

Competency Builders:

Identify how family values, goals, and priorities are reflected in work place
Identify responsibilities and rewards associated with paid and non-paid work
Identify responsibilities and rewards associated with families
Explain how family responsibilities can conflict with work
Explain how work can conflict with family responsibilities
Explain how work-related stress can affect families
Explain how family-related stress can affect work
Identify family support systems and resources
Identify work-related support systems and resources
Communicate with family regarding work

Competency: **Apply lifelong learning skills**

Competency Builders:

Define lifelong learning
Identify factors that cause need for lifelong learning
Analyze effects of change
Identify reasons why goals change
Describe importance of flexibility and adaptability
Evaluate need for continuing education/training

Competency: **Manage professional development**

Competency Builders:

Identify career opportunities
Modify career plan
Participate in continuing education/training opportunities
Document continuing education/training
Read profession-related manuals, technical journals, and periodicals
Attend meetings, workshops, seminars, conferences, and demonstrations
Participate in professional organizations
Build personal/professional mentor relationship
Build personal/professional support system
Build professional network
Strengthen communication skills
Strengthen leadership skills
Strengthen management skills

Unit: Teamwork

Competency: Demonstrate knowledge of teamwork

Competency Builders:

Define empowerment
Differentiate work groups and teams
Identify conditions essential to teamwork (e.g., brainstorming)
Explain influence of culture (e.g., corporate, community) on teamwork
Identify appropriate situations for using teams
Define team structures (e.g., cross functional, quality improvement, task force, quality circles)
Identify team building concepts
Describe characteristics and dynamics of teams
Identify characteristics of effective team leaders and members
Identify responsibilities of a valuable team member
Identify methods of involving each member of a team
Explain how individuals from various backgrounds contribute to work-related situations (e.g., technical training, cultural heritage)
Explain the purpose of facilitators
Define consensus
Define reward/recognition system

Competency: Demonstrate teamwork

Competency Builders:

Identify purpose of team and intended goal (include time frames)
Structure team around purpose
Define responsibilities of team members
Contribute to efficiency and success of team
Work toward individual and team milestones
Analyze results of team project
Facilitate a team meeting
Assist team member(s) with problem
Monitor time frame
Stress continuous improvement
Accept failure as part of learning

Competency: Use teamwork to solve problems

Competency Builders:

Identify appropriate situations for using teams
Use problem-solving process in a team setting
Identify quality management processes/techniques
Identify quality assurance processes/techniques
Prepare presentation

Competency: Conduct team meetings

Competency Builders:

Plan agenda
Schedule meeting and location
Invite appropriate personnel
Solicit outside speakers as needed
Assign someone to take minutes
Facilitate introductions
Invite questions and comments and group participation
Focus team on agenda items
Assign appropriate action, time frame and accountability to tasks
Monitor time
Close meeting on time
Publish minutes in timely manner
Set ground rules
Avoid placing individual agendas above the group's agenda

Unit: Professional and Ethical Standards

Competency: Explain professional responsibilities

Competency Builders:

Explain the need for professional and ethical standards
Explain responsibility of the individual to apply ethical standards
Identify responsibility to client(s) or employer(s)
Explain employer's consequences of unprofessional and/or unethical employee behavior
Identify responsibility to self (e.g., professional appearance and limitations) and to profession
Explain importance of conflict resolution in the workplace

Competency: Describe self-managed employees

Competency Builders:

Explain the need for organizing tasks
Explain management-by-objectives
Explain importance of planning, both long-term and short-term
Explain importance of evaluating progress
Explain importance of reporting progress
Explain time management
Explain the benefit of creative brainstorming and innovative thinking

Competency: Describe intellectual property

Competency Builders:

Explain legal ownership of proprietary assets produced by the computing professional
Explain public policy
Explain rights of the originator
Explain rights of the public
Explain patent
Explain copyright
Explain licenses
Explain confidentiality

Competency: **Apply professional and ethical standards**

Competency Builders:

Identify computing industry's standards
Describe computing industry's code of ethics
Explain various ethics established by computing societies
Apply various ethics established by computing societies

Unit: Economic and Business Principles

Competency: Describe basic economic concepts

Competency Builders:

Identify importance of economic resources
Explain concept of economic resources
Explain importance of economic resources
Explain concept of economic goods and services
Differentiate between economic goods and services
Differentiate between needs and wants
Explain concept of supply and demand
Explain concept of price
Explain how supply, demand, and price are related
Explain concept of private enterprise and business ownership
Explain concept of profit
Explain concept of risk
Explain concept of competition
Explain relationship among risk, competition, and profit

Competency: Conduct training

Competency Builders:

Secure training resources, materials, and equipment
Assess training needs
Train employees
Evaluate progress
Provide appropriate feedback

Competency: Evaluate economic systems

Competency Builders:

Compare types of economic systems
Research free enterprise system
Interpret relationship between government and business
Interpret relationship between labor and management

Competency: Illustrate basic economic principles

Competency Builders:

Illustrate global economic and world market applications
Illustrate economic cycles (e.g., unemployment, recession, inflation, budget deficits)
Illustrate economic activity's affect on business (e.g., financial, competitor indicators, industry)

Competency: Analyze cost and profit influences

Competency Builders:

Identify importance of maximizing quality
Identify importance of maximizing productivity
Contrast specialized training and cross training
Contrast labor and management
Contrast government and business

Competency: Illustrate economic indicators and trends

Competency Builders:

Define gross national product and gross domestic product
Interpret impact of interest rates
Interpret impact of government spending
Interpret impact of seasonal business cycles
Interpret impact of inflation, growth, recession, and unemployment
Interpret impact of national and world events
Interpret impact of the growth of international trade

Competency: Explain basic international trade concepts

Competency Builders:

Explain nature and importance of international trade
Contrast advantages and disadvantages of marketing in international trade
Explain balance of trade concepts
Describe impact of foreign investment

Competency: Explain basic business concepts

Competency Builders:

Identify functions of business
Explain role of management
Explain role of labor
Explain concept of service as a product
Explain role of administration
Explain role of operations
Identify role of company objectives
Identify importance of ethical business practices
Identify types of ownership
Identify components of a business plan

Competency: Summarize business principles

Competency Builders:

Explain business organizations and functions
Describe business reporting and information flow
Map interface of departmental functions
Identify communication channels (e.g., formal, informal)
Explain total quality management (TQM) principles

Competency: Illustrate legal concepts

Competency Builders:

Define legal terminology
Explain business law concepts
Interpret contracts and/or legal documents
Explain relationship of laws and regulations to company contracts, policies, and procedures
Explain laws relating to working conditions, wages and hours, civil rights, social security, disability, and unemployment insurance

Competency: Explain role of marketing

Competency Builders:

Explain aspects of sound business image
Identify purposes of marketing
Identify functions of marketing
Describe effects of marketing
Explain product/service variety
Identify target markets
Define sales potential
Explain pricing strategies
Differentiate advertising campaigns
Explain advantages and disadvantages of advertising agencies
Describe sales incentive programs
Maintain marketing feedback and make appropriate changes
Identify types of marketing strategies and the advantage and disadvantage of each
    (e.g. phone, mail, person)
Design monitor plan

Competency: Serve customers/clients

Competency Builders:

Identify importance of customer
Identify customer services to provide
Relate to customers in timely fashion
Identify customer needs and wants
Gather complete and accurate information
Apply customer service concepts and terminology
Identify methods for addressing dissatisfied customers

Unit: Customer Relations

Competency: **Demonstrate positive relations with customers**

Competency Builders:

Identify importance of customers to business
Differentiate between customer needs and wants
Provide prompt and courteous service
Resolve customer inquiries and complaints and/or refer customer to appropriate person
Identify methods of addressing dissatisfied customers

Competency: **Perform scheduling functions to meet customers needs**

Competency Builders:

Create calendar/schedule
Maintain appointment calendars
Process requests for appointments
Verify appointments
Notify customer of changes in schedule
Manage scheduling conflicts

Unit: Problem Analysis

Competency: Appraise situations

Competency Builders:

Identify concerns
Classify concerns
Set priorities
Identify resolution process
Plan resolution

Competency: Analyze potential problems

Competency Builders:

Identify potential problems
Identify likely causes
Identify preventive actions
Identify contingent actions

Competency: Analyze actual problems

Competency Builders:

Identify deviation
Identify problem and possible causes
Test for probable causes
Verify cause

Competency: Analyze decisions

Competency Builders:

Identify objective(s)
Classify objective(s)
Identify alternatives
Evaluate alternatives
Assess risks
Make final choice

Unit: Project Management

Competency: Explain project management

Competency Builders:

Identify project purpose/goal
Identify project objectives
Identify work breakdown structure (WBS)
Identify resource requirements

Competency: Plan projects

Competency Builders:

Apply responsibility assignment matrix (RAM)
Apply Gantt or bar charts
Apply network diagrams
Apply critical path method (CPM)
Apply project education and review techniques
Apply software programs

Competency: Implement projects

Competency Builders:

Monitor project
Control project
Modify project

Competency: Evaluate projects

Competency Builders:

Analyze performance
Close-out project evaluation
Draw project management conclusions

Unit: Technical Documentation

Competency: **Demonstrate proficiency in technical documentation**

Competency Builders:

Identify parameters
Ask questions
Interpret specifications or drawings
Record process (e.g., flowchart, step-by-step)
Record data
Maintain test logs
Compile cumulative reference/record

Competency: **Demonstrate proficiency in technical report writing**

Competency Builders:

Use data books and cross reference/technical manuals
Identify type of report needed
Compile relevant data
Design applicable charts and graphs
Analyze data
Draw conclusions
Outline reports
Write reports
Present reports

Unit: Basic Personal Computer Concepts

Competency: Explain use of personal computers in business

Competency Builders:

Describe the impact of computer use on individuals and businesses
Identify basic applications of computers in business
Identify automated business systems and electronic media
Identify different types and sizes of computers
Define input, processor, output, and storage units
Identify how PCs integrate with other information technologies (e.g., scanners, mainframes)
Describe impact of computer use on individuals and business
Identify basic applications of computers in business

Competency: Describe personal computer operations

Competency Builders:

Explain how data is stored in main computer memory
Explain how a computer system executes program instruction
Explain electronic storage capacity
Explain electronic units of measure and how they represent data
Identify data storage techniques
Identify types of memory
Explain different types of input and output

Competency: Explain information processing

Competency Builders:

Define operating systems
Describe the difference between data files and program files
Demonstrate knowledge of system commands
Define software types and functions
Describe basic disk operation and care
List business applications of software package
List advantages and disadvantages of integrated and dedicated software

Competency: Demonstrate computer literacy

Competency Builders:

Identify computer components
Identify parallel versus serial ports
Explain differences between conventional, expanded, and extended memory
Identify use of storage media
List commands that affect disk operation
Use disk operating system to format disks
Originate directories and subdirectories
Explain common configuration variables
Explain device driver concepts
Demonstrate commands that open, close, copy, delete, and rename files on disk
Keyboard document(s) using computer

Unit: Packaged PC Applications

Competency: Explain software applications

Competency Builders:

Describe need for application software
Describe different types of software applications
Explain advantages and disadvantages of various software applications
List software sources
Explain copyright laws for software

Competency: Explain spreadsheet packages

Competency Builders:

Define spreadsheet
Demonstrate knowledge of basic spreadsheet terminology
Define components of spreadsheets
Describe implementation of spreadsheet operations in business scope

Competency: Perform word processing functions

Competency Builders:

Define word processing terminology
Explain functions of word processing software
Explain word processing applications
Use appropriate reference materials
Keyboard efficiently by touch
Use mouse
Initialize diskette
Prepare backup file
Maintain backup file
Update spelling dictionary and spell check
Perform document functions (e.g., locate, rename, delete, save, retrieve, copy)
Perform formatting functions (e.g., set margins and tabs, center, underline, bold, cut and paste)
Use edit features
Use sort features
Add page numbers to document
Add headers and footers
Print files, pages, screens and blocks of text
Verify accuracy of output
Create a document
Save a document to disk
Retrieve a document from disk
Edit an existing document
Describe word-wrap
Print a document
Create glossary file
Store boilerplate material
Compose documents at keyboard
Tabulate multiple columns
Prepare new documents from existing ones
Merge selected copy with new information
Prepare various types of table options
Index text
Format text
Integrate database, spreadsheet and graphic files
Convert documents from one system to another
Demonstrate use of computer thesaurus
Use multimedia techniques/resources

Competency: Use spreadsheet packages

Competency Builders:

Use spell check
Execute an electronic spreadsheet
Enter data, formulas, and functions
Differentiate between labels and numbers
Compare absolute and relative addressing
Speculate using "what if..." questions
Sequence keystrokes in the creation of a macro
Create database within spreadsheet and perform data query functions
Move around in spreadsheet and correct errors
Format spreadsheet
Create graphs
Print graphs
Save previously saved files
Load previously saved files
Replicate cells using copy commands
Use electronic spreadsheet to complete business application
Use spreadsheet to plan financial strategies
Prepare spreadsheet
Use multimedia techniques/resources

Competency: Explain database packages

Competency Builders:

Define database
Explain terms used in database systems
Describe common functions of database systems

Competency: Use database packages

Competency Builders:

Use database package to create, input, edit, and display fields and records
Analyze structure of database files
Perform calculations with a database file
Alter structure of database file
Sort records based on multiple fields
Identify advanced database technology
Use appropriate reference materials
Create relational database
Enter elements into database
Proofread database
Edit database
Design report formats
Apply database management system (DBMS) commands
Print reports using data from multiple databases
Use database files with other application software
Verify accuracy of output (e.g., edit reports)
Use multimedia techniques/resources

Competency: Explain function of shared environments

Competency Builders:

List purposes of a network environment
Define electronic mail
Identify advantages and disadvantages of electronic mail
Describe impact of local and wide area networks on mail delivery

Competency: Use a shared environment

Competency Builders:

Compose electronic messages
Send electronic messages using appropriate format
List categories of electronic mail service
Transmit document using electronic mail system
Monitor electronic mail

Competency: Manage software packages

Competency Builders:

Install software packages
Upgrade software packages
Document installation of software packages
Convert data files

Competency: Perform computer business graphics

Competency Builders:

Define purpose and types of graphics
Use appropriate reference materials
Create graphics
Proofread graphics
Edit graphics
Save graphics
Retrieve graphics
Print graphics to various output devices
Verify accuracy of output
Use graphic functions to create files, input data, process data, and produce output
Use graphics files with other application software

Competency: Use graphic user interface (GUI) techniques

Competency Builders:

Explain multi tasking environment
Setup data exchange between two different applications
Setup an object link between two different applications
Explain the use of dynamic link libraries

Unit: General Office Functions

Competency: Maintain a safe working environment

Competency Builders:

Comply with company safety and health rules and regulations
Use appropriate reference materials
Use equipment correctly
Use appropriate actions during emergencies
Maintain a clean and orderly work area

Competency: Maintain work flow

Competency Builders:

Organize work
Prioritize work
Apply time-management techniques
Complete assigned tasks in a timely manner
Coordinate with team members as needed

Competency: Demonstrate positive relations with customers/clients

Competency Builders:

Identify importance of repeat customers to business
Identify customer needs and wants
Provide prompt and courteous service
Resolve customer inquiries and complaints and/or refer customer to appropriate person

Competency: Perform telephone operations

Competency Builders:

Use appropriate reference materials
Display telephone etiquette
Operate equipment
Route calls
Listen assertively
Verify information
Screen calls
Record messages
Relay messages timely
Place calls
Log long-distance calls
Create telephone directories
Maintain telephone directories
Organize teleconferences
Use voice mail/messaging systems

Competency: Use facsimile machine

Competency Builders:

Explain how a facsimile machine operates
Record information regarding material being sent
Operate facsimile
Verify to sender that process has been completed
File copy of facsimile order
Maintain supplies for facsimile use
Log maintenance needs regarding facsimile

Competency: Assist visitors

Competency Builders:

Greet visitors
Screen visitors
Maintain visitor log
Make appropriate introductions
Portray professional image

Competency: Perform scheduling functions

Competency Builders:

Create calendar/schedule
Maintain appointment calendars
Process requests for appointments
Verify appointments

Competency: Use job-related reference materials

Competency Builders:

Identify reference materials
Assemble reference materials
Abstract information from reference materials
Compile data

Competency: Coordinate meeting arrangements

Competency Builders:

Make arrangements with meeting planners
Distribute agenda
Assemble relevant information
Notify participants
Confirm arrangements

Competency: Generate minutes

Competency Builders:

Record appropriate notes
Gather materials
Prepare minutes
Distribute minutes
File minutes

Competency: Coordinate travel plans

Competency Builders:

Check travel resources
Inquire about traveler's preferences
Arrange necessary transportation and lodging
Obtain passports and/or visas
Confirm arrangements
Prepare itineraries
Distribute itineraries
Alter arrangements

Competency: Perform mail functions

Competency Builders:

Identify various mail and delivery services
Process incoming mail
Distribute mail
Operate equipment
Process outgoing mail

Competency: Maintain office supplies

Competency Builders:

Prepare cost justification for purchasing supplies
Order supplies
Verify supply order against supplies
Store and secure supplies
Distribute supplies
Inventory supplies
Prepare inventory reports

Competency: Perform copying functions

Competency Builders:

Use appropriate reference materials
Operate equipment
Collate documents
Maintain equipment
Identify copying methods
Identify best copying method for task
Identify characteristics of paper stock
Keep appropriate records
Identify appropriate copyright applications

Competency: Maintain filing system

Competency Builders:

Give reasons for keeping records
Identify types of records needed
Develop proper techniques/procedures for maintaining records
Use appropriate reference materials
Describe procedure for initial inventory of records
Organize files
Index files
File information
Retrieve information
Consolidate files
Archive or destroy files
Secure files for legality and confidentiality
Follow retention schedule
Create new files
Update files
Prepare materials for filing
Sort documents
Apply cross-referencing and logging systems
Store documents
Locate documents

Competency: **Maintain hardware and software**

Competency Builders:

Use appropriate reference materials
Evaluate hardware and software
Recommend hardware and software
Schedule routine hardware maintenance
Update software
Report malfunction(s)
Maintain usage logs
Inventory hardware and software

Unit: Office Technology

Competency: Use telecommunications

Competency Builders:

Define the role of telecommunications in business
Use appropriate reference materials
Operate telephone systems
Operate fax machines

Competency: Perform basic word processing functions

Competency Builders:

Create glossary file
Store boilerplate material
Compose documents at keyboard
Tabulate multiple columns
Prepare new documents from existing ones
Merge selected copy with new information
Prepare various types of table options
Index text
Format text
Integrate database, spreadsheet, and graphics files
Convert documents from one system to another
Demonstrate use of computer thesaurus

Competency: Perform transcription functions

Competency Builders:

Identify various types of dictation/transcription equipment
Keyboard documents
Proofread documents
Edit documents
Save documents
Retrieve documents
Print documents

Competency: Use computerized filing system

Competency Builders:

Identify uses for electronic filing system
List advantages and disadvantages of electronic filing
Retrieve information from filing system
Store records electronically
Duplicate records electronically
Transmit records electronically
Maintain financial records

Competency: Perform database functions

Competency Builders:

Identify advanced database technology
Use appropriate reference materials
Create relational database
Enter elements into database
Proofread database
Edit database
Design report formats
Apply database management system (DBMS) commands
Print reports using data from multiple databases
Use database files with other application software
Verify accuracy of output

Competency: Perform desktop publishing functions

Competency Builders:

Define desktop publishing
Explain word processing functions in desktop publishing
Use appropriate reference materials
Use desktop publishing terms
Use desktop publishing software
Use graphic design and layout functions of desktop publishing
Design publications
Merge word-processing, graphics, database, and spreadsheet files
Proofread documents
Edit documents
Save documents
Retrieve documents
Print documents using various output devices

Competency: Perform computer business graphics

Competency Builders:

Define purpose and types of graphics
Use appropriate reference materials
Create graphics
Proofread graphics
Edit graphics
Save graphics
Retrieve graphics
Print graphics to various output devices
Verify accuracy of output
Use graphic functions to create files, input data, process data, and produce output
Use graphics files with other application software

Unit: General Accounting Functions

Competency: Apply arithmetical accounting skills

Competency Builders:

Compute cash discounts for various terms
Compute trade discounts
Compute extension, sales tax, and totals of sales slips
Compute markups and markdowns
Calculate rates of trade and cash discounts
Calculate unit prices given quantity prices
Calculate costs of portions of units
Solve problems involving fractions, decimals, and percentages
Solve commission problems
Solve finance-charge problems
Solve annual percentage rate problems

Competency: Apply accounting principles

Competency Builders:

Define accounting terminology
Define journals and ledgers
Identify basic accounting principles
Identify basic accounting applications
Identify computer accounting applications
Identify financial control procedures
Explain increases and decreases in accounts
Explain periodic reporting procedures
Prepare income statement
Prepare balance sheet columns
Prepare cash flow statement
Interpret balance sheets
Interpret income statements
Interpret cash-flow analysis statements

Competency: Perform manual accounting functions

Competency Builders:

Explain use of record keeping in relation to business and economic applications
Use appropriate reference materials
Analyze transactions
Use "T" accounts to label increases, decreases, and balances
Record transactions
Process receivables
Monitor expense accounts
Process payables
Prepare budgets
Process purchases
Prepare comparative (actual vs. budget) income statement

Competency: Perform automated accounting functions

Competency Builders:

Use appropriate reference materials
Operate equipment
Key data on numeric keyboard
Import or download data from computer records
Scan data from various media
Use integrated software package for simulation of accounting cycle
Set up chart of accounts for general ledger
Set up accounts payable and accounts receivable ledgers
Add accounts to general and subsidiary ledgers
Input account balances
Enter journal transactions
Process journal transaction
Prepare trial balance
Verify data and correct errors
Generate reports
Proofread accounting records and statements
Edit accounting records and statements
Save accounting records and statements
Retrieve accounting records and statements
Print accounting records and statements

Competency: **Perform spreadsheet functions**

Competency Builders:

Explain computer spreadsheet analysis
Use appropriate reference materials
Operate equipment
Create or format spreadsheet
Enter formulas
Move cells and ranges
Enter data on spreadsheet
Import or download data to spreadsheet
Apply data sort, data query, data fill, and data distribution
Export spreadsheet files to word processing, graphics and database files
Import spreadsheet files to word processing, graphics and database files
Proofread spreadsheet data
Edit spreadsheet data
Verify accuracy of output
Save spreadsheet
Retrieve spreadsheet
Print spreadsheet
Use spreadsheet functions to create files, input data, process data, and produce output
Use spreadsheet files with other application software

Competency: Perform payroll functions

Competency Builders:

Use appropriate reference materials
Collect payroll data
Process payroll
Comply with company policies and procedures
Comply with government and legal requirements
Maintain records and forms
Monitor personnel costs

Competency: Perform banking functions

Competency Builders:

Use appropriate reference materials
Prepare checks, deposit slips, and withdrawal slips
Maintain checkbook
Balance checkbook
Maintain petty cash
Balance petty cash
Explain automated banking transactions
Prepare banking records
Maintain banking records

Competency: Process cost accounting information

Competency Builders:

Define cost accounting, direct materials, direct labor and overhead
Define cost allocation methods
Identify source documents
Compute direct materials by job or process
Compute direct labor by job or process
Compute overhead rates to apply to jobs or processes
Compute cost of goods produced
Compute cost of goods sold
Journalize cost of goods produced and sold entries
Post cost of goods produced and sold entries
Compute cost of inventories
Prepare cost production reports
Prepare related records of job or process costs

Competency: Process end-of-fiscal-period information

Competency Builders:

Prepare worksheet
Prepare trial balance
Foot ledger accounts and compute balances
Prove equality of debits and credits
Locate errors
Record adjustments
Make appropriate extensions
Journalize basic adjusting, closing, and reversing entries
Post basic adjusting, closing, and reversing entries
Prepare basic income statement
Prepare basic balance sheet
Prepare basic cash flow statement

Unit: Specialized Accounting Functions

Competency: Process purchase orders

Competency Builders:

Identify source documents
Verify purchase requisitions
Prepare purchase orders and related documents/records
Prepare receiving reports

Competency: Process purchase invoices

Competency Builders:

Verify invoices against purchase orders and receiving reports
Check invoice calculations
Journalize purchase invoice entries
Post purchase invoice entries

Competency: Process purchase returns and allowances

Competency Builders:

Verify return of goods
Issue debit memorandums
Journalize purchase returns and allowance entries
Post purchase return and allowance entries

Competency: Process accounts payable

Competency Builders:

Identify source documents
Journalize payable entries
Post payable entries
Maintain subsidiary records
Reconcile subsidiary records to accounts payable
Prepare schedule of accounts payable

Competency: Process purchase payables and payments

Competency Builders:

Verify invoices, vouchers, and/or interoffice memorandums for payment
Identify purchase discounts
Prepare checks or electronic transfers
Mark source documents paid
Journalize payment entries
Post payment entries
Adjust subsidiary records

Competency: Process notes and interest payable

Competency Builders:

Identify source documents
Identify appropriate entries for notes payable
Compute payment of notes payable and interest
Record payment of notes payable and interest
Journalize note payables entries
Post note payables entries

Competency: Process invoices and receivables

Competency Builders:

Identify source documents
Verify sales invoices
Journalize sales invoice entries
Post sales invoice entries
Maintain subsidiary records

Competency: Process sales returns and allowances

Competency Builders:

Verify sales returns and allowances
Prepare credit memorandums
Journalize sales returns and allowance entries
Post sales return and allowance entries
Adjust subsidiary records

Competency: Process uncollectible accounts

Competency Builders:

Prepare schedule of aged accounts receivable
Apply company policies and procedures to determine uncollectibles
Prepare related documents
Journalize uncollectible acccunt entries
Post uncollectible account entries
Adjust subsidiary records

Competency: Process collections

Competency Builders:

Identify due dates for various discount terms
Compare receipts with amount due
Verify checks, money orders, credit card receipts, and cash
Prepare cash proofs
Prepare deposits
Verify sales discounts
Prepare related documents
Journalize receipt entries
Post receipt entries
Adjust subsidiary records

Competency: Process notes and interest receivables

Competency Builders:

Identify source documents
Identify appropriate entries for notes receivable
Compute and record principal and interest of notes receivable entries
Journalize notes receivable entries
Post notes receivable entries

Competency: Perform checking account functions

Competency Builders:

Issue checks
Keep check records
Journalize entries
Post entries
Reconcile bank statement
File checks and deposit slips

Competency: Maintain petty cash fund

Competency Builders:

Set up petty cash fund
Pay petty cash vouchers
Reconcile petty cash fund
Replenish petty cash fund
Journalize petty cash transaction entries
Post petty cash transaction entries

Competency: Process employee payroll records

Competency Builders:

Obtain required employee forms
Set up employee payroll records
Update employee earnings records
Update employee benefits records
Prepare payroll distribution forms
Process employee time information

Competency: Process payroll

Competency Builders:

Calculate regular and overtime hours
Compute gross earnings
Compute deductions
Compute net pay
Prepare voucher checks
Prepare payroll checks
Journalize payroll entries
Post payroll and deduction entries

Competency: Process employer payroll taxes

Competency Builders:

Apply payroll laws and regulations
Prepare required tax deposits/payments
Prepare payroll tax returns as required
Prepare employee tax forms and reports as required
Journalize employer's payroll tax entries
Post employer's payroll tax entries
Post recorded liability for payroll tax entries
Post withholding and payroll taxes

Competency: Process accruals and deferrals

Competency Builders:

Define accruals and deferrals
Calculate amounts to be accrued and deferred
Journalize accrued and deferred liability and revenue entries
Post accrued and deferred liability and revenue entries
Journalize reversing entries as required
Post reversing entries

Competency: **Use financial statements to make business decisions**

Competency Builders:

Prepare balance sheet
Prepare income statement
Prepare cash-flow analysis
Prepare break-even analysis
Prepare budgets
Prepare comparative financial statement
Prepare cost and revenue analysis
Interpret financial statements
Make financial recommendations

Competency: **Update value of plant and equipment assets**

Competency Builders:

Differentiate between revenue and capital expenditures
Define depreciation methods
Calculate depreciation
Journalize plant and equipment asset entries
Post plant and equipment asset entries
Journalize depreciation entries
Post depreciation entries
Record disposition of plant assets by selling, discarding, and trading
Post disposal of plant and equipment asset entries

Unit: Computer Operations

Competency: Operate computer systems

Competency Builders:

Define job, batch, and job step
Describe data requirements
Use appropriate reference materials
Perform power-up and log-on procedures
Demonstrate basic programming skills
Use console device to interact with and respond to system messages
Secure supplies and resources
Follow processing procedures for each application/job
Run application/job
Describe scheduling priority
Describe transmittal form and transmittal log
Develop an audit trail
Handle materials and equipment in a responsible manner
Use electronic data interchange (EDI)

Competency: Maintain computer systems

Competency Builders:

Monitor system status and performance
Run diagnostics
Report computer system malfunction(s)
Report software malfunction(s)
Fix recoverable problems
Maintain security
Maintain computer log
Perform backup procedure(s)
Perform preventive maintenance
Follow log-off and power-down procedure(s)
Follow equipment maintenance procedures
Follow quality control procedures
Describe operator duties and job scheduling

Competency: Maintain security requirements

Competency Builders:

Apply business ethics
Follow security rules, regulations, and codes
Implement security procedures
Document security procedures
Perform security checks

Competency: Explain operation of peripheral devices

Competency Builders:

Identify peripherals and operating requirements of each
Identify primary devices used for personal computer auxiliary storage
Describe how data is stored on diskettes and hard drives
List speed and storage capacities of computer auxiliary storage devices
Describe attributes of diskettes and hard disks regarding speed and storage capacity
List types of disk storage used with large computer systems
Define role of tape storage in relation to personal and large computers
Describe security issues
Explain purpose of input devices (e.g., keyboard, mouse, scanners, pens, bar code readers, credit/debit/smart cards, voice, video, gloves, joysticks)
Describe operation of output devices (e.g., voice, speaker output devices, printers, plotters, printer sharing units, SCSI interface, video display)
Describe operation of multimedia (e.g., video, audiosound)
Describe operation of storage devices (e.g., tape, disk, CD-ROM)

Competency: Operate peripheral devices

Competency Builders:

Use appropriate reference materials
Load media devices
Start media devices
Unload media devices
Import, edit, and export video and audio
Set up print devices
Operate scanner devices
Operate print devices
Maintain print devices
Monitor peripheral equipment operations
Perform routine maintenance on peripheral devices
List appropriate control procedures
Demonstrate output processing, bursting, decollating, splitting, and shredding
Transmit via modem
Receive via modem
Search a CD-ROM library
Print information from a CD-ROM library
Describe device driver

Competency: Store media

Competency Builders:

Identify need for data library
Use appropriate reference materials
Retrieve stored media (e.g., on-line, off-line, permanent, off-site)
File stored media (e.g., on-line, off-line, permanent, off-site)
Initialize media
Catalog media
Maintain supplies
Maintain media library
Maintain backup records
Maintain company and/or government standards for media security
Maintain archives of company records required by policy or law

Competency: Maintain microcomputers

Competency Builders:

Use appropriate reference materials
Install PC
Change hardware
Set up system configuration
Install software packages
Respond to system messages
Run software applications
Back up systems
Restore systems
Report computer malfunction(s)
Report software malfunction(s)
Perform preventative maintenance

Competency: Explain operating systems

Competency Builders:

Identify operating systems and their attributes
Describe how commands handle tasks in operating systems
Describe various input/output systems
Describe the purpose of operating system utilities
Differentiate between a compiler and an interpreter
Describe the processing that occurs when an interpreter is used
Describe the processing that occurs when a compiler is used

Unit: Software Methodology

Competency: Solve fundamental software methodology problems

Competency Builders:

Explain basic concepts of algorithm development and programming
Use commands to implement algorithmic solution
Create test data for algorithmic solution
Test reliability of implementing algorithmic solution
Complete project (given formal specifications) requiring incorporation of control structures
Explain principles of program design (e.g., structure, object oriented, event driven)
Solve problems involving basic control structures (e.g., sequence, selection, iteration)
Describe different data types (e.g., numeric, alphanumeric)
Explain software design process (i.e., specification through implementation and testing)
Resolve issues of program implementation (e.g., debug, documentation, audit)

Competency: Describe tools used to design software systems

Competency Builders:

Explain modular design and programming, including specifications and design tools
Explain module (i.e., subroutine) implementation
Explain module testing
Explain module documentation
Explain module maintenance
Explain data normalization as used in defining databases
Explain computer-aided software engineering (CASE)
Explain object-oriented programming (OOP)
Differentiate build versus buy decisions

Competency: Develop software requirements

Competency Builders:

Use interviewing strategies to gather information
Describe different system design models (e.g., client server, centralized)
Identify system requirements
Develop informal specifications
Develop formal specifications
Develop documentation
Apply computing standards and methodologies
Apply security measures

Competency: Design software

Competency Builders:

Explain and/or chart process design
Write software (e.g., top-down, module testing)
Debug software system
Trace software system
Test software system and data
Apply computing standards
Apply security measures
Obtain customer approval

Unit: Operating Systems

Competency: Describe operating systems

Competency Builders:

Describe microcomputer operating systems
Describe minicomputer operating systems
Describe mainframe operating systems
Describe network operating systems
Describe how commands handle tasks in operating systems
Describe various input/output systems
Describe the purpose of operating system utilities
Differentiate between a compiler and an interpreter
Describe the processing that occurs when an interpreter is used
Describe the processing that occurs when a compiler is used

Competency: Explain central processing unit (CPU) control

Competency Builders:

Explain CPU processes
Explain CPU concurrency
Explain CPU scheduling
Explain CPU multitasking
Explain CPU multiprocessing

Competency: Describe memory management

Competency Builders:

Describe functions of primary memory
Describe functions of virtual memory (e.g., paging, segmentation)
Describe functions of extended memory
Describe functions of expanded memory
Describe functions of cache memory

Competency: Explain auxiliary storage management

Competency Builders:

Explain storage management software
Identify auxiliary storage media
Describe operational characteristics of storage media
Describe storage capacities of storage media
Describe retrieval methods of storage media
Differentiate between files and directories
Differentiate among management devices (e.g., disk, tape, CD-ROM)
Explain redundant array of inexpensive disks (RAID)
Explain mirroring concepts

Competency: Store media

Competency Builders:

Identify need for data library
Use appropriate reference materials
Retrieve stored media
File stored media
Initialize media
Catalog media
Maintain supplies
Maintain media library
Maintain backup records
Maintain company and/or government standards for media security
Maintain archives of company records required by policy or law

Competency: Explain security issues

Competency Builders:

Define backup and recovery
Explain disaster planing
Define authentication (e.g., passwords, access level)
Describe encryption techniques
Describe viruses and worms
Describe vaccines
Explain operating system penetration

Competency: Maintain security requirements

Competency Builders:

Implement security procedures
Apply business ethics
Follow security rules, regulations, and codes
Document security procedures
Perform security checks

Competency: Define open system concepts

Competency Builders:

Differentiate between proprietary and open system architecture
Explain X/OPEN
Explain purpose of Open Software Foundation
Explain purpose of UNIX International
Explain purpose of Corporation for Open Systems International
Identify the OSI Model

Competency: Operate system

Competency Builders:

Review automated scheduling software
Define job, batch, and job step
Describe data requirements
Use appropriate reference materials
Perform power-up and log-on procedures
Demonstrate basic programming skills
Use console device to interact with and respond to system messages
Secure supplies and resources
Follow processing procedures for each application/job
Run application/job
Describe scheduling priority
Describe transmittal form and transmittal log
Develop an audit trail
Handle materials and equipment in a responsible manner

Competency: Maintain system

Competency Builders:

Use appropriate reference materials
Monitor system status and performance
Run diagnostics
Respond to system messages
Report computer system malfunction(s)
Report software malfunction(s)
Fix recoverable problems
Maintain security
Maintain computer log
Perform backup procedure(s)
Perform preventative maintenance procedures
Change hardware
Install software packages
Restore system
Follow log-off and power-down procedure(s)

Competency: Administer system

Competency Builders:

Manage complete system
Manage network
Manage operating system
Manage applications

Unit: Application Programming and Design

Competency: Explain computer applications

Competency Builders:

Explain hardware component functions
Explain uses of a computer
Describe major events in the development of computers
Describe major types of software and their functions
Read computer publications
Interpret computer trends
Describe batch processing
Describe interactive processing
Describe ad hoc reporting

Competency: Develop computer applications

Competency Builders:

Use appropriate reference materials
Analyze specifications
Divide design specifications into logical blocks (e.g. flowchart, data flow diagram, system flows record and layout)
Identify constraints
Identify programming language
Identify input and output (I/O) requirements
Prepare logic using program-flow diagram

Competency: Explain programming theory

Competency Builders:

Explain the meaning of "reserved word"
Describe arrays and tables
Explain compilers
Differentiate between system documentation and user documentation
Describe what is meant by top-down design and structured programming
Identify the steps in the program development cycle
Design a decision table for a specified problem
Identify the steps and procedures required to develop test data
Explain the difference between recursion and iteration
Describe what is meant by data validation
Describe what is meant by "object oriented" programming

Competency: Apply programming theory

Competency Builders:

Demonstrate use of working storage variables
Write source code per standards
Use spacing charts to plan program output
Code a modular program
Interpret a simple hierarchy chart
Interpret a simple pseudocode design
Create a flow-chart
Perform program sorts
Demonstrate use of loops
Demonstrate use of logical operators (e.g., AND, OR, NOT)
Code error-handling techniques
Demonstrate use of data files

Competency: Explain programming languages

Competency Builders:

Outline history of programming languages
Identify primary use of programming languages and their weaknesses
List rules for naming variables

Competency: **Use programming language**

Competency Builders:

Perform character manipulation
Declare variables
Initialize variables
Modify variables
Demonstrate a function
Demonstrate a library
Demonstrate a subroutine
Demonstrate system calls
Apply conditional statements
Evaluate series of logical expressions
Code separate addition, subtraction, multiplication, and division statements
Declare a one-dimensional array
Initialize an array
Generate executable code

Competency: **Use operating system**

Competency Builders:

Apply appropriate text editor
Apply operating system commands
Apply operating system utilities

Competency: **Test programs**

Competency Builders:

Explain debugging statements
Perform debugging functions
Debug compilation errors
Create test data that checks logic and error routines
Execute program with test data
Correct execution errors
Perform unit and integration test
Analyze test results
Define auto testing software

Competency: Apply programming skills

Competency Builders:

Demonstrate knowledge of file and table processing
Develop program using data validation techniques
Develop interactive process
Develop menu-driven program
Develop database program
Develop program that utilizes a recursive process
Develop program using copy libraries
Develop program using system calls
Develop program using design tool

Competency: Develop documentation

Competency Builders:

Prepare program documentation
Prepare user documentation
Prepare data-flow diagrams
Update design documentation

Competency: Demonstrate knowledge of the systems design process

Competency Builders:

Identify processing requirements
Identify programming language
Use appropriate reference materials
Describe role of user and management in the development of a computer system
Describe use of data flow diagrams, system flowcharts and display screen layout forms
Conduct interviews
Design system inputs and outputs and processes
Create design documentation
Present system design

Competency: Evaluate system

Competency Builders:

Identify evaluation criteria
Develop test plan
Analyze test data
Present results
Recommend corrective action, if appropriate
Explain iterative nature of system evaluation

Competency: Implement system

Competency Builders:

Identify implementation plan
Identify conversion method
Train personnel
Present implementation plan

Unit: Network Operations

Competency: Explain communication standards

Competency Builders:

Identify the seven layers of the International Organization Standard's Open System Interconnection (OSI) Model
Describe each OSI layer, including their interconnectivity
Identify software standards for subnet, presentation layers, and file servers

Competency: Describe network structures

Competency Builders:

Differentiate topologies (e.g., hierarchical, ring, star)
Differentiate architecture(s)
Explain layering
Describe protocols (e.g., TCP/IP, IPX/SPX, etc..)
Describe frame types (e.g., SNA<802.3, 802.5)
Define local area network
Define different types of LANs
Differentiate between network operating systems and data distribution systems
Identify advantages and disadvantages of various LAN operating systems
List duties of LAN supervisor

Competency: Explain network transmission and media

Competency Builders:

Explain signals
Explain patterns
Explain error detection and correction
Explain speed of transmission
Explain use of media
Explain use of equipment
Explain role of network manager

Competency: **Explain network connectivity and interoperability**

Competency Builders:

Identify equipment connecting devices
Differentiate between sync and async devices
Identify software connecting devices
Identify media connecting devices
Identify type of interoperability (e.g., peer-to-peer, peer-to-host)
Identify problems of mixed vendor network implementation
Describe internetworking solutions
Describe cabling schemes and alternatives
Identify network topologies
List pros and cons of network interface cards
List pros and cons of network servers
Explain why internetting is useful or necessary
Describe levels at which internetting can occur
Identify protocols used for remote interconnecting and when each should be used
List common pitfalls when networking computers
Identify method used to evaluate emulators
Describe gateways (e.g., mainframe, protocol)

Competency: **Describe network operating systems**

Competency Builders:

Identify responsibilities of a network operating system
Explain installation procedure for network operating systems
Explain commands needed to use network operating systems
List characteristics of a network interface card (NIC)
Define criteria used to describe network servers
Define criteria used to evaluate network operating systems

Competency: **Describe potential networking problems with applications software**

Competency Builders:

Describe potential hard disk compatibility problems
Differentiate between site multi user and single user licenses
Describe necessary precautions included in programs used on networks

Competency: Explain network management

Competency Builders:

List steps in mapping a network
Explain why files must be organized according to owners, users, and privileges
Describe common standards for setting up and naming files
List criteria used to determine if a file should be network accessible
Identify methods to increase performance
Define hierarchical directory
Explain methods used to determine how many servers should be used
State reasons for channel and cable bottlenecks

Competency: Explain network security

Competency Builders:

Explain need for data protection
Identify common backup devices
Explain criteria for selecting a tape system
Differentiate between hard and soft errors
Contrast streaming and file-by-file backup systems
Explain process for archiving files
Explain necessity for network security
Identify levels of network sedulity and reasons for their existence

Competency: Explain installation procedures

Competency Builders:

Explain why an installation log is necessary
Identify methods of distributing cable, including modeling examples
Identify problems associated with cable installation
Describe types of cable, cable connectors, and grounding techniques
Explain cable testing and tolerance levels
Identify sources of interference and include methods to overcome each

Competency: Use network knowledge

Competency Builders:

Use electronic/voice/multi-media mail
Share files
Use dial-in access
Make backups
Share resources
Explain software control
Apply security and authentication

Competency: Apply network operations

Competency Builders:

Assess user needs to determine which LAN operating systems to use
Demonstrate applications used on LANs
Describe how the network protocols work together
Operate the system in a multi-user environment
Demonstrate knowledge of various networks and compatibility
Differentiate among various topologies
Identify which network operating system to use
Build synchronous transmission circuit using a modem
Build synchronous transmission circuit using a modem
Connect PCs to form a network
Connect two PCs networks
Perform file to file copy in a PC network
Implement print queue in a PC network
Configure file server in a PC network
Connect PC to mini or mainframe
Link mixed vendors (e.g., PC to Mac)
Interconnect via backbone network
Build small ethernet or token ring network

Competency: Administer network

Competency Builders:

Use appropriate reference materials
Apply current LAN concepts and technology
Attach computers and peripherals to LAN
Change computer hardware
Set up system configuration
Install LAN manager software
Install software packages
Respond to system messages
Troubleshoot system
Run software applications
Back up and restore systems
Perform system analysis
Use security procedures
Perform preventative maintenance
Select access control and security
Outline resource management
Install cabling
Install network
Analyze network operations
Check physical and virtual connections
Modify network
Apply standards
Acquire licensing
Plan disaster recovery
Address protocols (e. g., ethernet, token ring, Arcnet)
Monitor network activity/performance

Competency: Perform network maintenance and diagnostics

Competency Builders:

Execute network diagnostics program for software
Execute network diagnostics program for hardware
Apply standard and protocols
Document action(s) taken

Unit: Basic Mainframe Concepts

Competency: Describe mainframe operations

Competency Builders:

Identify types of mainframe memory
Identify data storage techniques used by mainframe operation
Explain how data is stored in mainframe computer memory
Explain how a mainframe computer system executes program instruction
Explain mainframe storage capacity

Competency: Describe interface techniques

Competency Builders:

Identify elements of mainframe user interface
Identify mainframe hardware components and their advantages and disadvantages
Trace evolution of user interface software for mainframe
Illustrate various forms of mainframe menus
Describe mainframe graphical user interface (GUI)

Competency: Explain information processing cycle

Competency Builders:

Define mainframe operating systems
Define data processing terminology
Describe the difference between data files and program files
Differentiate between internal and external commands
Differentiate among interactive, transaction-oriented, and batch processing
Describe processing capabilities of computer operations
Specify roles of systems, procedures, and personnel in mainframe information processing
Explain functions of input, output, revision, distribution, storage, and reproduction

Competency: Explain purpose of mainframe database systems

Competency Builders:

Define mainframe database
Explain terms used in mainframe database systems
Describe common function of mainframe database systems

Competency: Use mainframe database system

Competency Builders:

Enter data into database and sort
Enter data into database and retrieve
Enter data into database and select
Prepare formatted business forms using mainframe database

Unit: Computer Hardware Design

Competency: **Explain standards**

Competency Builders:

Identify OSI, IEEE, ISO, and CCITT standards
Identify standard setting bodies and their proclamations
Explain conformance and APIs

Competency: **Describe computational site environment**

Competency Builders:

Identify environmental requirements
Identify power requirements and power supplies
Identify ergonomic issues
Identify structural capacities
Identify local codes

Competency: **Differentiate among architecture and processor types**

Competency Builders:

Describe architecture and processors of microcomputers
Describe architecture and processors of minicomputers
Describe architecture and processors of mainframes
Explain instruction sets

Competency: Analyze computer systems architecture

Competency Builders:

Describe the principles and operation of addresses and interrupts
Describe the principles and operation of volatile and non-volatile memory
Describe the principles and operation of advanced memory techniques
Define individual system blocks
Draw systems configuration in block detail
Interpret computer acronyms
Describe priorities and interrupts at systems level
Identify direct memory access data handling system(s)
Define functions of advanced memory techniques (e.g., virtual, pipeline, cache)
Describe how commands handle tasks in operating systems
Describe various input/output systems
Describe the purpose of operating system utilities
Differentiate between a compiler and an interpreter
Describe the processing that occurs when an interpreter is used
Describe the processing that occurs when a compiler is used

Competency: Describe operation of chips and boards

Competency Builders:

Describe chip configuration and structure
Describe operation of memory boards, including chip sizes
Describe operation of mother boards
Describe operation of compressor boards (e.g., math, graphics, FAX, modems, voice)
Describe operation of controller cards
Describe operation of network interface cards
Describe operation of PCMCIA

Competency: Describe operation of connectivity devices

Competency Builders:

Describe operation of baluns
Describe operation of multiplexers, MODEMS, CODECS, DSU
Describe operation of switches, gateways, bridges, routers, brouters, and repeaters
Describe operation of test equipment (e.g., protocol analyzers)

Competency: **Explain operation of microprocessor systems**

Competency Builders:

Describe essential components of microprocessor and their functions
Describe principles and operation of BUS concepts (e.g., VESA, EISA)
Describe principles and operation of types of memory circuits
Identify operating systems (e.g., DOS, OS/2, UNIX) and their attributes
Describe microprocessor instructions sets
Describe principles and operation of microprocessor machine code
Demonstrate use of microprocessor machine code
Decode microprocessor machine code
Identify types of input and output devices and peripherals
Describe principles and operation of storage devices
Interface input and output ports to peripherals
Identify central processing unit building blocks and their uses
Identify levels of computer languages

Competency: **Troubleshoot a microcomputer system**

Competency Builders:

Draw system configuration in block detail
Identify priorities and interrupts at system level
Operate computer system architecture
Repair computer system architecture
Demonstrate use of volatile and non-volatile memory
Repair or replace volatile and non-volatile memory

Competency: **Install computer system (i.e., monitor, keyboard, disk drive, and printer)**

Competency Builders:

Configure system
Verify system
Print copy of root directory to printer
Document system installation

Competency: Explain operation of peripheral equipment

Competency Builders:

Identify types of card and paper-tape equipment and interface controllers
Define printer types and interface controllers
Explain the operation of typical magnetic tape equipment and interface controllers
Describe disk equipment and interface controllers
Define environmental requirements for peripherals and media

Competency: Repair peripheral equipment

Competency Builders:

Troubleshoot and repair disk equipment and interface controllers
Troubleshoot and repair display terminals and interface controllers, including touch screens
Troubleshoot and repair printers and interface controllers, including laser printers
Troubleshoot and repair mouse
Troubleshoot and repair bar code scanner
Troubleshoot and repair CD-ROM

Competency: Explain communication interfacing

Competency Builders:

Identify EIA, IEEE and CCITT standards
Differentiate sync and async devices
Define networking levels or layers
Define protocols
Define packet switching
Define multi-user systems

Unit: Database Modeling and Design

Competency: Explain database concepts

Competency Builders:

Define terms used in database systems
Describe common functions of database systems
Explain commonly used database structures (e.g., hierarchical, relational)
Explain database security techniques

Competency: Create a database model

Competency Builders:

Explain referential integrity and normalization
Identify data elements
Identify keys
Create database structure

Competency: Perform database functions

Competency Builders:

Use database package to create, input, edit, and display fields and records
Analyze structure of database files
Perform calculations with a database file
Alter structure of database file
Sort records based on multiple fields
Identify advanced database technology
Use appropriate reference materials
Create relational database
Enter elements (data) into database
Proofread database
Edit database
Design report formats
Apply database management system (DBMS) commands
Print reports using data from multiple databases
Use database files with other application software
Verify accuracy of output

Unit: Small Business Management

Competency: Explain entrepreneurship

Competency Builders:

Identify characteristics of entrepreneurs
Identify qualities and skills needed by business owners
Identify means of obtaining technical assistance
Identify advantages and disadvantages of owning a small business
Identify personal risks of owning a small business
Describe basic factors contributing to business success
Describe a franchise-dealer relationship

Competency: Evaluate entrepreneurship as a personal goal

Competency Builders:

Evaluate personal interests and resources (e.g., time, energy, skills)
Compare personal interests and skills with those necessary for entrepreneurship
Assess aptitude to become a successful entrepreneur
Identify motives for becoming an entrepreneur

Competency: Develop a business plan

Competency Builders:

List sources of information for starting a business
Classify local and state requirements for starting business
Identify risks of creating a new business
Differentiate among market characteristics
Analyze financing of business ownership
Develop marketing strategies

Competency: Identify role of small business in the economy

Competency Builders:

Identify factors that contribute to the success and failure of small business
Describe effects of supply, demand, profit, and competition on small business
Explain relationship of small business to a national (USA) and global economy

Competency: Analyze how legislation affects small business

Competency Builders:

Identify legal issues faced by entrepreneurs
Describe the relationship between government and entrepreneurs
Explain the effects of regulation on the business operation
Identify when and how to obtain appropriate legal assistance
Participate in the legislative process

Competency: Evaluate factors affecting small business management

Competency Builders:

Identify advantages and disadvantage of various types of ownership
Identify cooperative arrangements
Describe legal forms of retail businesses
Differentiate between various types of insurable business risks
Describe social and ethical problems that affect business
Classify types of government regulations that affect business
Analyze current trends in business
List costs that must be considered when starting a business
Select best location and layout for a business

Competency: Identify marketing mix

Competency Builders:

Explain importance of having the right product
Explain importance of having the product at the right place
Explain importance of having the product with the right promotion
Explain importance of having the product at the right price
Explain importance of having the product at the right time

Competency: Promote products and/or services

Competency Builders:

Explain selling function
Explain promotion function
Describe relationship of sales to promotion
Describe how to plan for special events and public relations activities
Explain importance of maintaining a check on competitors' promotions
Identify factors used to select appropriate products
Prepare merchandise/buying plan
Maintain vendor information and select appropriate vendors
Identify selling price
Keep abreast of merchandising trends

Competency: Manage customer relations

Competency Builders:
Identify advantages of customer services and accommodations
Identify advantages of attractive, comfortable facilities
Explain importance of price, quality, and variety
Use acceptable techniques in handling customer complaints

Competency: Minimize internal theft

Competency Builders:

Establish internal theft policy
Identify types of internal loss
Identify potential loss situations
Report employee theft
Follow company policies regarding internal theft
Follow security procedures

Competency: Explain financing methodologies

Competency Builders:

Explain leasing
Explain stock ownership
Explain bond ownership
Explain convertible securities
Explain bank loans

Competency: Identify costs of financial services

Competency Builders:

Classify revenue and expenses
Speculate on revenue sources and expenses
Identify start-up costs
Explain means of obtaining financial assistance
Explain importance of a sound credit rating
Outline long-range financial plans
Explain how sources of finance are used in business operations
Compare financial services available from financial institutions

Competency: Prepare financial records and reports

Competency Builders:

Record receipts and payments
Adjust cash flow upon the introduction of a variable
Justify budget items
Record income and expenditures
Report employee records for audit and taxation purposes

Competency: Explain management's role in operating a business

Competency Builders:

Explain importance of organizational skills
Identify management functions performed by entrepreneurs
Describe responsibilities and rewards of small business management
Compare specific management techniques
Explain importance of time management
Identify benefits of membership in professional/trade associations
Identify professional support system(s)
Explain need for basic accounting skills
Identify free sources of information and support
Explain importance of fundamental marketing skills
Describe benefits of continuous employee training

Competency: **Practice safety precautions**

Competency Builders:

Maintain safe work area
Operate equipment safely
Practice safety to prevent accidents
Follow procedures for reporting accidents
Follow safety procedures for special populations
Follow government regulations (e.g., OSHA, EPA)
Follow sanitation and hygiene procedures
Report emergencies to proper authorities
Identify emergency evacuation plans
Operate fire and safety equipment

Competency: **Comply with government regulations**

Competency Builders:

Identify sources of information and assistance
Identify regulations, licensing, and permits affecting business operations
Identify taxes affecting small businesses
Develop policies of compliance
Develop basic first aid skills
Monitor changing regulations

Competency: Perform management activities

Competency Builders:

Define management
Describe basic principles of good management
Identify effective leadership traits
Develop management objectives
Explain role of management in operating a business
Identify purposes of forecasting
Identify purpose of selecting appropriate marketing strategies
Develop short-term and long-term action plans
Describe importance of performance measurements and record keeping
Explain importance of keeping informed of developments and trends affecting business
Explain importance of planning for emergencies
Prepare managerial reports about production, personnel, equipment, and operational costs
Identify elements of a general budget
Describe use of credit by a business
Identify accounting statements that provide business information
Develop short/long range plans including Equal Access/Equal Opportunity (EAEO) guidelines
Develop procedures for handling employee complaints
Evaluate job applicants
Recommend employees for promotion
Identify contract laws
Describe the effects of insurance
Describe risk management alternatives (e.g., fire, theft, liability)
Describe consumer credit plans
Describe procedures for collection of accounts
Explain inventory control systems
Explain need for an equipment maintenance plan
Explain need for a facility maintenance plan

Unit: Supervision

Competency: Manage human resources

Competency Builders:

Apply appropriate management and leadership styles
Use foresight to anticipate and manage change
Display managerial and supervisory skills
Apply human relations skills
Develop management objectives
Create and/or implement organizational charts
Clarify company policies and procedures
Maintain office procedures manual(s)
Establish office procedures
Prepare and/or monitor budgets
Prepare managerial reports
Analyze production reports
Maintain appropriate work environment
Conduct tours
Monitor progress
Prepare and communicate productivity reports
Provide and/or coordinate training for new policies
Troubleshoot office problems
Communicate performance expectations
Counsel employees about career objectives
Maintain performance records
Adhere to company policies regarding discrimination and harassment
Address employees regarding disciplinary action(s)
Recommend employees for promotion
Explain procedure for handling grievances
Evaluate employee performance
Document personnel issues

Competency: Manage projects

Competency Builders:

Conduct needs analysis
Set priorities
Research information
Develop goals and objectives
Develop strategic plan
Develop project budget
Apply forecasting techniques
Apply prioritizing techniques
Schedule work assignments
Collect data
Analyze data
Act on data
Monitor project progress
Meet project timelines
Monitor budget
Apply quality measures and counter measures

Competency: Manage work flow

Competency Builders:

Plan office layout for workflow
Create organizational charts
Communicate operating policies and procedures
Maintain office procedures manual(s)
Identify production standards
Interface with other departments
Prioritize work
Assign work
Delegate work
Provide instruction
Monitor progress
Complete productivity and/or managerial reports
Complete assigned tasks in a timely manner
Coordinate with team members

Competency: Conduct staff/team meetings

Competency Builders:

Plan meeting
Set agenda
Set and schedule meeting
Schedule meeting room
Invite appropriate personnel
Identify need for outside speakers
Assign someone to take minutes
Make introductions
Invite questions and comments, and group participation
Focus on agenda items, but maintain issues list as they arise
Decide appropriate action, time frame, and accountability to tasks
Monitor time
Close meeting on time
Publish minutes in timely manner to appropriate persons

Competency: Conduct training

Competency Builders:

Secure training resources, materials, and equipment
Assess training needs
Train employees
Evaluate progress
Provide appropriate feedback
Document training participation

Information Support Specialist

NOTE: Each TCP should respond to labor market demands in your area. Therefore, the following pages should be examined before being selected for use in TCP Part I (See "The TCP Process" Tab). For example, some units may not apply to your situation, nor might all the competencies within each unit be appropriate. Also, note that several units appear within each of the twelve occupations in this binder. Those "common" units should only appear once in the draft competency list for TCP Part I if you are compiling several occupations in a cluster format (See "TCP Matrix" Tab).

Units to Consider:	Page
Employability Skills	IS-3
Professionalism	IS-8
Teamwork	IS-12
Professional and Ethical Standards	IS-14
Economic and Business Principles	IS-16
Customer Relations	IS-20
Problem Analysis	IS-21
Project Management	IS-22
Technical Documentation	IS-23
Basic Personal Computer Concepts	IS-24
Packaged PC Applications	IS-26
General Office Functions	IS-31
Office Technology	IS-37
General Accounting Functions	IS-40
Computer Operations	IS-45
Software Methodology	IS-49
Operating Systems	IS-51
Application Programming and Design	IS-55
Network Operations	IS-60
Basic Mainframe Concepts	IS-65
Computer Hardware Design	IS-67
Supervision	IS-71

DON'T FORGET TO INSERT YOUR ACADEMIC COMPETENCIES HERE

Communications Literacy, Mathematics Literacy, Science Literacy, and Technology Literacy have been removed so that you may insert your own academic lists here.

COMMUNICATIONS LITERACY

(e.g., Reading, Writing, Speaking, and Listening)

MATHEMATICS LITERACY

(e.g., Algebra, Geometry, Trigonometry, Calculus)

SCIENCE LITERACY

(e.g., Physical Science, Environmental Science, Agriscience, Biology, Chemistry, Physics, Anatomy & Physiology)

TECHNOLOGY LITERACY

(i.e., the impact of technology on humans and their home, work, and play environments)

Unit: Employability Skills

Competency: Develop a career plan

Competency Builders:

Identify current interests and aptitudes
Identify common barriers to employment
Describe strategies to overcome employment barriers
Locate resources for finding employment
Research job trends
Identify career options
Identify advantages and disadvantages of career options (in addition to other than monetary)
Identify job requirements
Investigate education/training opportunities
Evaluate personal strengths and weaknesses

Competency: Prepare for employment

Competency Builders:

Identify traditional and non-traditional employment sources
Identify present and future employment opportunities (by geographic location)
Research job opportunities, including non-traditional careers
Compare salary ranges and benefit packages
Compile occupational profile
Identify rights and responsibilities of equal employment opportunity laws
Design resume and cover letter
Target resume
Secure references
Investigate generic and specific employment tests (e.g., civil service exam; drug screening)
Use follow-up techniques to enhance employment potential
Demonstrate legible written communication skills using correct grammar, spelling, punctuation, and concise wording
Describe methods for handling illegal questions on job application forms and during interviews
Write letter of application
Research prospective employer and services performed
Explain critical importance of personal appearance, hygiene, and demeanor
Interpret job description
Demonstrate appropriate interview question and answer techniques
Demonstrate methods for handling difficult interview questions
Evaluate job offers
Write letter of acceptance
Write letter of declination
Demonstrate good listening skills
Ask for the job tactfully
Participate in extracurricular activities (e.g., student government, community projects,)

Competency: Evaluate the importance of self-esteem as an employability skill

Competency Builders:

Identify factors that affect self-esteem
Compare effects of low self-esteem and high self-esteem
Identify strategies to promote positive self-esteem

Competency: Demonstrate job retention skills

Competency Builders:

Identify employer expectations regarding job performance, work habits, attitudes, personal appearance, and hygiene
Exhibit appropriate work habits and attitude
Demonstrate ability to set priorities
Identify behaviors to establish successful working relationships
Identify alternatives for dealing with harassment, bias, and discrimination based on race, color, national origin, sex, religion, handicap, or age
Identify opportunities for advancement
List reasons for termination
List consequences of being absent frequently from job
List consequences of frequently arriving late for work
Demonstrate interpersonal relations skills (i.e., verbal and written)
Demonstrate negotiation skills
Demonstrate teamwork
Follow chain-of-command
Exhibit appropriate job dedication

Competency: Demonstrate knowledge of work ethic

Competency Builders:

Define work ethic
Identify factors that influence work ethic
Differentiate law and ethics
Describe how personal values are reflected in work ethic
Describe how interactions in the workplace affect personal work ethic
Describe how life changes affect personal work ethic

Competency: Exhibit appropriate work ethic

Competency Builders:

Use time-management techniques
Avoid personal activity during work hours
Attend work as scheduled
Adhere to company and/or governmental policies, procedures, rules, and regulations
Exercise confidentiality
Demonstrate appropriate human relations skills
Adhere to rules of conduct
Accept constructive criticism
Offer constructive criticism
Take pride in work
Resolve conflict
Manage stress
Avoid sexual connotations and harassment
Adjust to changes in the workplace
Demonstrate punctuality
Assume responsibility for personal decisions and actions
Take responsibility for assignments
Follow chain-of-command

Competency: Apply decision-making techniques

Competency Builders:

Identify decision to be made
Identify ownership of decision to be made
Identify possible alternatives and their consequences
Make decisions based on facts, legality, ethics, goals, and/or culture
Apply time factor(s)
Present decision to be implemented
Evaluate decision made
Take responsibility for decision

Competency: Apply problem-solving techniques

Competency Builders:

Identify problem
Select appropriate problem solving tools/techniques
Identify root problem cause(s)
Track root problem cause(s)
Identify possible solutions and their consequences (e.g., long term, short term, crisis)
Use resources to explore possible solutions to problem
Contrast advantages and disadvantages of each solution
Identify appropriate action
Evaluate results
Identify post-preventive action

Competency: Exhibit characteristics for job advancement

Competency Builders:

Display positive attitude
Demonstrate knowledge of position
Perform quality work
Adapt to changing situations and technology
Demonstrate capability/responsibility for different positions
Identify characteristics of effective leaders
Identify opportunities for leadership in work place/community
Demonstrate initiative to affect change in workplace
Participate in continuing education/training program
Responds appropriately to criticism from employer, supervisor, or other employees
Exhibit awareness of corporate culture
Prepare for job setbacks
Exhibit continual growth based on performance evaluation
Set realistic goals

Unit: Professionalism

Competency: Project professional image

Competency Builders:

Define professionalism
Exhibit professional appearance
Exhibit professional manners
Project professional attitude
Identify individuals' vital role in organization
Exhibit proper etiquette in professionally-related situations

Competency: Achieve individual and professional goals

Competency Builders:

Set flexible, realistic, and measurable goals
Identify potential barriers to achieving goals
Identify strategies for addressing barriers to goal achievement
Breakdown long-term goals into short-term goals
Prioritize goals
Commit to goals
Adjust goals
Obtain support for goals
Reward goal achievement

Competency: Manage personal finances

Competency Builders:

Explain need for personal management records
Balance checkbook
Identify tax obligations
Analyze how credit affects financial security
Compare types and methods of investments
Compare types and methods of borrowing
Compare types and methods of insurance
Compare types of retirement options/plans
Identify discriminatory vs. non-discriminatory expenditures

Competency: Support community well-being

Competency Builders:

Identify environmental, educational, and social issues
Participate in social and/or community activities

Competency: Achieve organizational goals

Competency Builders:

Evaluate personal goals in relation to organizational goals
Monitor progress by evaluating feedback
List responsibilities in relation to organization goals
Accomplish assigned tasks
Exercise responsibility in relation to organizational goals
Set appropriate personal performance standards
Communicate goals with supervisor and peers
Demonstrate knowledge of products and services
Promote organizational image and mission

Competency: Demonstrate positive relations in the workplace

Competency Builders:

Identify personality types of self and other
Identify various management styles
Support employer expectations
Support employer decisions
Accept constructive criticism
Give constructive feedback
Adapt to changes in workplace
List factors to consider before resigning
Write letter of resignation

Competency: Manage stressful situations

Competency Builders:

Accept stress as part of daily life
Identify personal and professional factors contributing to stress
Describe physical and emotional responses to stress
Evaluate positive and negative effects of stress on productivity
Identify strategies for reducing stress
Implement strategies to manage stress
Create strategies for developing and maintaining support systems

Competency: Analyze effects of family on work and work on family

Competency Builders:

Identify how family values, goals, and priorities are reflected in work place
Identify responsibilities and rewards associated with paid and non-paid work
Identify responsibilities and rewards associated with families
Explain how family responsibilities can conflict with work
Explain how work can conflict with family responsibilities
Explain how work-related stress can affect families
Explain how family-related stress can affect work
Identify family support systems and resources
Identify work-related support systems and resources
Communicate with family regarding work

Competency: Apply lifelong learning skills

Competency Builders:

Define lifelong learning
Identify factors that cause need for lifelong learning
Analyze effects of change
Identify reasons why goals change
Describe importance of flexibility and adaptability
Evaluate need for continuing education/training

Competency: **Manage professional development**

Competency Builders:

Identify career opportunities
Modify career plan
Participate in continuing education/training opportunities
Document continuing education/training
Read profession-related manuals, technical journals, and periodicals
Attend meetings, workshops, seminars, conferences, and demonstrations
Participate in professional organizations
Build personal/professional mentor relationship
Build personal/professional support system
Build professional network
Strengthen communication skills
Strengthen leadership skills
Strengthen management skills

Unit: Teamwork

Competency: Demonstrate knowledge of teamwork

Competency Builders:

Define empowerment
Differentiate work groups and teams
Identify conditions essential to teamwork (e.g., brainstorming)
Explain influence of culture (e.g., corporate, community) on teamwork
Identify appropriate situations for using teams
Define team structures (e.g., cross functional, quality improvement, task force, quality circles)
Identify team building concepts
Describe characteristics and dynamics of teams
Identify characteristics of effective team leaders and members
Identify responsibilities of a valuable team member
Identify methods of involving each member of a team
Explain how individuals from various backgrounds contribute to work-related situations (e.g., technical training, cultural heritage)
Explain the purpose of facilitators
Define consensus
Define reward/recognition system

Competency: Demonstrate teamwork

Competency Builders:

Identify purpose of team and intended goal (include time frames)
Structure team around purpose
Define responsibilities of team members
Contribute to efficiency and success of team
Work toward individual and team milestones
Analyze results of team project
Facilitate a team meeting
Assist team member(s) with problem
Monitor time frame
Stress continuous improvement
Accept failure as part of learning

Competency: Use teamwork to solve problems

Competency Builders:

Identify appropriate situations for using teams
Use problem-solving process in a team setting
Identify quality management processes/techniques
Identify quality assurance processes/techniques
Prepare presentation

Competency: Conduct team meetings

Competency Builders:

Plan agenda
Schedule meeting and location
Invite appropriate personnel
Solicit outside speakers as needed
Assign someone to take minutes
Facilitate introductions
Invite questions and comments and group participation
Focus team on agenda items
Assign appropriate action, time frame and accountability to tasks
Monitor time
Close meeting on time
Publish minutes in timely manner
Set ground rules
Avoid placing individual agendas above the group's agenda

Unit: Professional and Ethical Standards

Competency: Explain professional responsibilities

Competency Builders:

Explain the need for professional and ethical standards
Explain responsibility of the individual to apply ethical standards
Identify responsibility to client(s) or employer(s)
Explain employer's consequences of unprofessional and/or unethical employee behavior
Identify responsibility to self (e.g., professional appearance and limitations) and to profession
Explain importance of conflict resolution in the workplace

Competency: Describe self-managed employees

Competency Builders:

Explain the need for organizing tasks
Explain management-by-objectives
Explain importance of planning, both long-term and short-term
Explain importance of evaluating progress
Explain importance of reporting progress
Explain time management
Explain the benefit of creative brainstorming and innovative thinking

Competency: Describe intellectual property

Competency Builders:

Explain legal ownership of proprietary assets produced by the computing professional
Explain public policy
Explain rights of the originator
Explain rights of the public
Explain patent
Explain copyright
Explain licenses
Explain confidentiality

Competency: Apply professional and ethical standards

Competency Builders:

Identify computing industry's standards
Describe computing industry's code of ethics
Explain various ethics established by computing societies
Apply various ethics established by computing societies

Unit: Economic and Business Principles

Competency: Describe basic economic concepts

Competency Builders:

Identify importance of economic resources
Explain concept of economic resources
Explain importance of economic resources
Explain concept of economic goods and services
Differentiate between economic goods and services
Differentiate between needs and wants
Explain concept of supply and demand
Explain concept of price
Explain how supply, demand, and price are related
Explain concept of private enterprise and business ownership
Explain concept of profit
Explain concept of risk
Explain concept of competition
Explain relationship among risk, competition, and profit

Competency: Conduct training

Competency Builders:

Secure training resources, materials, and equipment
Assess training needs
Train employees
Evaluate progress
Provide appropriate feedback

Competency: Evaluate economic systems

Competency Builders:

Compare types of economic systems
Research free enterprise system
Interpret relationship between government and business
Interpret relationship between labor and management

Competency: Illustrate basic economic principles

Competency Builders:

Illustrate global economic and world market applications
Illustrate economic cycles (e.g., unemployment, recession, inflation, budget deficits)
Illustrate economic activity's affect on business (e.g., financial, competitor indicators, industry)

Competency: Analyze cost and profit influences

Competency Builders:

Identify importance of maximizing quality
Identify importance of maximizing productivity
Contrast specialized training and cross training
Contrast labor and management
Contrast government and business

Competency: Illustrate economic indicators and trends

Competency Builders:

Define gross national product and gross domestic product
Interpret impact of interest rates
Interpret impact of government spending
Interpret impact of seasonal business cycles
Interpret impact of inflation, growth, recession, and unemployment
Interpret impact of national and world events
Interpret impact of the growth of international trade

Competency: Explain basic international trade concepts

Competency Builders:

Explain nature and importance of international trade
Contrast advantages and disadvantages of marketing in international trade
Explain balance of trade concepts
Describe impact of foreign investment

Competency: Explain basic business concepts

Competency Builders:

Identify functions of business
Explain role of management
Explain role of labor
Explain concept of service as a product
Explain role of administration
Explain role of operations
Identify role of company objectives
Identify importance of ethical business practices
Identify types of ownership
Identify components of a business plan

Competency: Summarize business principles

Competency Builders:

Explain business organizations and functions
Describe business reporting and information flow
Map interface of departmental functions
Identify communication channels (e.g., formal, informal)
Explain total quality management (TQM) principles

Competency: Illustrate legal concepts

Competency Builders:

Define legal terminology
Explain business law concepts
Interpret contracts and/or legal documents
Explain relationship of laws and regulations to company contracts, policies, and procedures
Explain laws relating to working conditions, wages and hours, civil rights, social security, disability, and unemployment insurance

Competency: Explain role of marketing

Competency Builders:

Explain aspects of sound business image
Identify purposes of marketing
Identify functions of marketing
Describe effects of marketing
Explain product/service variety
Identify target markets
Define sales potential
Explain pricing strategies
Differentiate advertising campaigns
Explain advantages and disadvantages of advertising agencies
Describe sales incentive programs
Maintain marketing feedback and make appropriate changes
Identify types of marketing strategies and the advantage and disadvantage of each (e.g. phone, mail, person)
Design monitor plan

Competency: Serve customers/clients

Competency Builders:

Identify importance of customer
Identify customer services to provide
Relate to customers in timely fashion
Identify customer needs and wants
Gather complete and accurate information
Apply customer service concepts and terminology
Identify methods for addressing dissatisfied customers

Unit: Customer Relations

Competency: **Demonstrate positive relations with customers**

Competency Builders:

Identify importance of customers to business
Differentiate between customer needs and wants
Provide prompt and courteous service
Resolve customer inquiries and complaints and/or refer customer to appropriate person
Identify methods of addressing dissatisfied customers

Competency: **Perform scheduling functions to meet customers needs**

Competency Builders:

Create calendar/schedule
Maintain appointment calendars
Process requests for appointments
Verify appointments
Notify customer of changes in schedule
Manage scheduling conflicts

Unit: Problem Analysis

Competency: Appraise situations

Competency Builders:

Identify concerns
Classify concerns
Set priorities
Identify resolution process
Plan resolution

Competency: Analyze potential problems

Competency Builders:

Identify potential problems
Identify likely causes
Identify preventive actions
Identify contingent actions

Competency: Analyze actual problems

Competency Builders:

Identify deviation
Identify problem and possible causes
Test for probable causes
Verify cause

Competency: Analyze decisions

Competency Builders:

Identify objective(s)
Classify objective(s)
Identify alternatives
Evaluate alternatives
Assess risks
Make final choice

Unit: Project Management

Competency: Explain project management

Competency Builders:

Identify project purpose/goal
Identify project objectives
Identify work breakdown structure (WBS)
Identify resource requirements

Competency: Plan projects

Competency Builders:

Apply responsibility assignment matrix (RAM)
Apply Gantt or bar charts
Apply network diagrams
Apply critical path method (CPM)
Apply project education and review techniques
Apply software programs

Competency: Implement projects

Competency Builders:

Monitor project
Control project
Modify project

Competency: Evaluate projects

Competency Builders:

Analyze performance
Close-out project evaluation
Draw project management conclusions

Unit: Technical Documentation

Competency: Demonstrate proficiency in technical documentation

Competency Builders:

Identify parameters
Ask questions
Interpret specifications or drawings
Record process (e.g., flowchart, step-by-step)
Record data
Maintain test logs
Compile cumulative reference/record

Competency: Demonstrate proficiency in technical report writing

Competency Builders:

Use data books and cross reference/technical manuals
Identify type of report needed
Compile relevant data
Design applicable charts and graphs
Analyze data
Draw conclusions
Outline reports
Write reports
Present reports

Unit: Basic Personal Computer Concepts

Competency: Explain use of personal computers in business

Competency Builders:

Describe the impact of computer use on individuals and businesses
Identify basic applications of computers in business
Identify automated business systems and electronic media
Identify different types and sizes of computers
Define input, processor, output, and storage units
Identify how PCs integrate with other information technologies (e.g., scanners, mainframes)
Describe impact of computer use on individuals and business
Identify basic applications of computers in business

Competency: Describe personal computer operations

Competency Builders:

Explain how data is stored in main computer memory
Explain how a computer system executes program instruction
Explain electronic storage capacity
Explain electronic units of measure and how they represent data
Identify data storage techniques
Identify types of memory
Explain different types of input and output

Competency: Explain information processing

Competency Builders:

Define operating systems
Describe the difference between data files and program files
Demonstrate knowledge of system commands
Define software types and functions
Describe basic disk operation and care
List business applications of software package
List advantages and disadvantages of integrated and dedicated software

Competency: **Demonstrate computer literacy**

Competency Builders:

Identify computer components
Identify parallel versus serial ports
Explain differences between conventional, expanded, and extended memory
Identify use of storage media
List commands that affect disk operation
Use disk operating system to format disks
Originate directories and subdirectories
Explain common configuration variables
Explain device driver concepts
Demonstrate commands that open, close, copy, delete, and rename files on disk
Keyboard document(s) using computer

Unit: Packaged PC Applications

Competency: Explain software applications

Competency Builders:

Describe need for application software
Describe different types of software applications
Explain advantages and disadvantages of various software applications
List software sources
Explain copyright laws for software

Competency: Explain spreadsheet packages

Competency Builders:

Define spreadsheet
Demonstrate knowledge of basic spreadsheet terminology
Define components of spreadsheets
Describe implementation of spreadsheet operations in business scope

Competency: Perform word processing functions

Competency Builders:

Define word processing terminology
Explain functions of word processing software
Explain word processing applications
Use appropriate reference materials
Keyboard efficiently by touch
Use mouse
Initialize diskette
Prepare backup file
Maintain backup file
Update spelling dictionary and spell check
Perform document functions (e.g., locate, rename, delete, save, retrieve, copy)
Perform formatting functions (e.g., set margins and tabs, center, underline, bold, cut and paste)
Use edit features
Use sort features
Add page numbers to document
Add headers and footers
Print files, pages, screens and blocks of text
Verify accuracy of output
Create a document
Save a document to disk
Retrieve a document from disk
Edit an existing document
Describe word-wrap
Print a document
Create glossary file
Store boilerplate material
Compose documents at keyboard
Tabulate multiple columns
Prepare new documents from existing ones
Merge selected copy with new information
Prepare various types of table options
Index text
Format text
Integrate database, spreadsheet and graphic files
Convert documents from one system to another
Demonstrate use of computer thesaurus
Use multimedia techniques/resources

Competency: Use spreadsheet packages

Competency Builders:

Use spell check
Execute an electronic spreadsheet
Enter data, formulas, and functions
Differentiate between labels and numbers
Compare absolute and relative addressing
Speculate using "what if..." questions
Sequence keystrokes in the creation of a macro
Create database within spreadsheet and perform data query functions
Move around in spreadsheet and correct errors
Format spreadsheet
Create graphs
Print graphs
Save previously saved files
Load previously saved files
Replicate cells using copy commands
Use electronic spreadsheet to complete business application
Use spreadsheet to plan financial strategies
Prepare spreadsheet
Use multimedia techniques/resources

Competency: Explain database packages

Competency Builders:

Define database
Explain terms used in database systems
Describe common functions of database systems

Competency: Use database packages

Competency Builders:

Use database package to create, input, edit, and display fields and records
Analyze structure of database files
Perform calculations with a database file
Alter structure of database file
Sort records based on multiple fields
Identify advanced database technology
Use appropriate reference materials
Create relational database
Enter elements into database
Proofread database
Edit database
Design report formats
Apply database management system (DBMS) commands
Print reports using data from multiple databases
Use database files with other application software
Verify accuracy of output (e.g., edit reports)
Use multimedia techniques/resources

Competency: Explain function of shared environments

Competency Builders:

List purposes of a network environment
Define electronic mail
Identify advantages and disadvantages of electronic mail
Describe impact of local and wide area networks on mail delivery

Competency: Use a shared environment

Competency Builders:

Compose electronic messages
Send electronic messages using appropriate format
List categories of electronic mail service
Transmit document using electronic mail system
Monitor electronic mail

Competency: Manage software packages

Competency Builders:

Install software packages
Upgrade software packages
Document installation of software packages
Convert data files

Competency: Perform computer business graphics

Competency Builders:

Define purpose and types of graphics
Use appropriate reference materials
Create graphics
Proofread graphics
Edit graphics
Save graphics
Retrieve graphics
Print graphics to various output devices
Verify accuracy of output
Use graphic functions to create files, input data, process data, and produce output
Use graphics files with other application software

Competency: Use graphic user interface (GUI) techniques

Competency Builders:

Explain multi tasking environment
Setup data exchange between two different applications
Setup an object link between two different applications
Explain the use of dynamic link libraries

Unit: General Office Functions

Competency: **Maintain a safe working environment**

Competency Builders:

Comply with company safety and health rules and regulations
Use appropriate reference materials
Use equipment correctly
Use appropriate actions during emergencies
Maintain a clean and orderly work area

Competency: **Maintain work flow**

Competency Builders:

Organize work
Prioritize work
Apply time-management techniques
Complete assigned tasks in a timely manner
Coordinate with team members as needed

Competency: **Demonstrate positive relations with customers/clients**

Competency Builders:

Identify importance of repeat customers to business
Identify customer needs and wants
Provide prompt and courteous service
Resolve customer inquiries and complaints and/or refer customer to appropriate person

Competency: Perform telephone operations

Competency Builders:

Use appropriate reference materials
Display telephone etiquette
Operate equipment
Route calls
Listen assertively
Verify information
Screen calls
Record messages
Relay messages timely
Place calls
Log long-distance calls
Create telephone directories
Maintain telephone directories
Organize teleconferences
Use voice mail/messaging systems

Competency: Use facsimile machine

Competency Builders:

Explain how a facsimile machine operates
Record information regarding material being sent
Operate facsimile
Verify to sender that process has been completed
File copy of facsimile order
Maintain supplies for facsimile use
Log maintenance needs regarding facsimile

Competency: Assist visitors

Competency Builders:

Greet visitors
Screen visitors
Maintain visitor log
Make appropriate introductions
Portray professional image

Competency: Perform scheduling functions

Competency Builders:

Create calendar/schedule
Maintain appointment calendars
Process requests for appointments
Verify appointments

Competency: Use job-related reference materials

Competency Builders:

Identify reference materials
Assemble reference materials
Abstract information from reference materials
Compile data

Competency: Coordinate meeting arrangements

Competency Builders:

Make arrangements with meeting planners
Distribute agenda
Assemble relevant information
Notify participants
Confirm arrangements

Competency: Generate minutes

Competency Builders:

Record appropriate notes
Gather materials
Prepare minutes
Distribute minutes
File minutes

Competency: Coordinate travel plans

Competency Builders:

Check travel resources
Inquire about traveler's preferences
Arrange necessary transportation and lodging
Obtain passports and/or visas
Confirm arrangements
Prepare itineraries
Distribute itineraries
Alter arrangements

Competency: Perform mail functions

Competency Builders:

Identify various mail and delivery services
Process incoming mail
Distribute mail
Operate equipment
Process outgoing mail

Competency: Maintain office supplies

Competency Builders:

Prepare cost justification for purchasing supplies
Order supplies
Verify supply order against supplies
Store and secure supplies
Distribute supplies
Inventory supplies
Prepare inventory reports

Competency: Perform copying functions

Competency Builders:

Use appropriate reference materials
Operate equipment
Collate documents
Maintain equipment
Identify copying methods
Identify best copying method for task
Identify characteristics of paper stock
Keep appropriate records
Identify appropriate copyright applications

Competency: Maintain filing system

Competency Builders:

Give reasons for keeping records
Identify types of records needed
Develop proper techniques/procedures for maintaining records
Use appropriate reference materials
Describe procedure for initial inventory of records
Organize files
Index files
File information
Retrieve information
Consolidate files
Archive or destroy files
Secure files for legality and confidentiality
Follow retention schedule
Create new files
Update files
Prepare materials for filing
Sort documents
Apply cross-referencing and logging systems
Store documents
Locate documents

Competency: **Maintain hardware and software**

Competency Builders:

Use appropriate reference materials
Evaluate hardware and software
Recommend hardware and software
Schedule routine hardware maintenance
Update software
Report malfunction(s)
Maintain usage logs
Inventory hardware and software

Unit: Office Technology

Competency: Use telecommunications

Competency Builders:

Define the role of telecommunications in business
Use appropriate reference materials
Operate telephone systems
Operate fax machines

Competency: Perform basic word processing functions

Competency Builders:

Create glossary file
Store boilerplate material
Compose documents at keyboard
Tabulate multiple columns
Prepare new documents from existing ones
Merge selected copy with new information
Prepare various types of table options
Index text
Format text
Integrate database, spreadsheet, and graphics files
Convert documents from one system to another
Demonstrate use of computer thesaurus

Competency: Perform transcription functions

Competency Builders:

Identify various types of dictation/transcription equipment
Keyboard documents
Proofread documents
Edit documents
Save documents
Retrieve documents
Print documents

Competency: Use computerized filing system

Competency Builders:

Identify uses for electronic filing system
List advantages and disadvantages of electronic filing
Retrieve information from filing system
Store records electronically
Duplicate records electronically
Transmit records electronically
Maintain financial records

Competency: Perform database functions

Competency Builders:

Identify advanced database technology
Use appropriate reference materials
Create relational database
Enter elements into database
Proofread database
Edit database
Design report formats
Apply database management system (DBMS) commands
Print reports using data from multiple databases
Use database files with other application software
Verify accuracy of output

Competency: Perform desktop publishing functions

Competency Builders:

Define desktop publishing
Explain word processing functions in desktop publishing
Use appropriate reference materials
Use desktop publishing terms
Use desktop publishing software
Use graphic design and layout functions of desktop publishing
Design publications
Merge word-processing, graphics, database, and spreadsheet files
Proofread documents
Edit documents
Save documents
Retrieve documents
Print documents using various output devices

Competency: Perform computer business graphics

Competency Builders:

Define purpose and types of graphics
Use appropriate reference materials
Create graphics
Proofread graphics
Edit graphics
Save graphics
Retrieve graphics
Print graphics to various output devices
Verify accuracy of output
Use graphic functions to create files, input data, process data, and produce output
Use graphics files with other application software

Unit: General Accounting Functions

Competency: Apply arithmetical accounting skills

Competency Builders:

Compute cash discounts for various terms
Compute trade discounts
Compute extension, sales tax, and totals of sales slips
Compute markups and markdowns
Calculate rates of trade and cash discounts
Calculate unit prices given quantity prices
Calculate costs of portions of units
Solve problems involving fractions, decimals, and percentages
Solve commission problems
Solve finance-charge problems
Solve annual percentage rate problems

Competency: Apply accounting principles

Competency Builders:

Define accounting terminology
Define journals and ledgers
Identify basic accounting principles
Identify basic accounting applications
Identify computer accounting applications
Identify financial control procedures
Explain increases and decreases in accounts
Explain periodic reporting procedures
Prepare income statement
Prepare balance sheet columns
Prepare cash flow statement
Interpret balance sheets
Interpret income statements
Interpret cash-flow analysis statements

Competency: Perform manual accounting functions

Competency Builders:

Explain use of record keeping in relation to business and economic applications
Use appropriate reference materials
Analyze transactions
Use "T" accounts to label increases, decreases, and balances
Record transactions
Process receivables
Monitor expense accounts
Process payables
Prepare budgets
Process purchases
Prepare comparative (actual vs. budget) income statement

Competency: Perform automated accounting functions

Competency Builders:

Use appropriate reference materials
Operate equipment
Key data on numeric keyboard
Import or download data from computer records
Scan data from various media
Use integrated software package for simulation of accounting cycle
Set up chart of accounts for general ledger
Set up accounts payable and accounts receivable ledgers
Add accounts to general and subsidiary ledgers
Input account balances
Enter journal transactions
Process journal transaction
Prepare trial balance
Verify data and correct errors
Generate reports
Proofread accounting records and statements
Edit accounting records and statements
Save accounting records and statements
Retrieve accounting records and statements
Print accounting records and statements

Competency: Perform spreadsheet functions

Competency Builders:

Explain computer spreadsheet analysis
Use appropriate reference materials
Operate equipment
Create or format spreadsheet
Enter formulas
Move cells and ranges
Enter data on spreadsheet
Import or download data to spreadsheet
Apply data sort, data query, data fill, and data distribution
Export spreadsheet files to word processing, graphics and database files
Import spreadsheet files to word processing, graphics and database files
Proofread spreadsheet data
Edit spreadsheet data
Verify accuracy of output
Save spreadsheet
Retrieve spreadsheet
Print spreadsheet
Use spreadsheet functions to create files, input data, process data, and produce output
Use spreadsheet files with other application software

Competency: Perform payroll functions

Competency Builders:

Use appropriate reference materials
Collect payroll data
Process payroll
Comply with company policies and procedures
Comply with government and legal requirements
Maintain records and forms
Monitor personnel costs

Competency: Perform banking functions

Competency Builders:

Use appropriate reference materials
Prepare checks, deposit slips, and withdrawal slips
Maintain checkbook
Balance checkbook
Maintain petty cash
Balance petty cash
Explain automated banking transactions
Prepare banking records
Maintain banking records

Competency: Process cost accounting information

Competency Builders:

Define cost accounting, direct materials, direct labor and overhead
Define cost allocation methods
Identify source documents
Compute direct materials by job or process
Compute direct labor by job or process
Compute overhead rates to apply to jobs or processes
Compute cost of goods produced
Compute cost of goods sold
Journalize cost of goods produced and sold entries
Post cost of goods produced and sold entries
Compute cost of inventories
Prepare cost production reports
Prepare related records of job or process costs

Competency: **Process end-of-fiscal-period information**

Competency Builders:

Prepare worksheet
Prepare trial balance
Foot ledger accounts and compute balances
Prove equality of debits and credits
Locate errors
Record adjustments
Make appropriate extensions
Journalize basic adjusting, closing, and reversing entries
Post basic adjusting, closing, and reversing entries
Prepare basic income statement
Prepare basic balance sheet
Prepare basic cash flow statement

Unit: Computer Operations

Competency: Operate computer systems

Competency Builders:

Define job, batch, and job step
Describe data requirements
Use appropriate reference materials
Perform power-up and log-on procedures
Demonstrate basic programming skills
Use console device to interact with and respond to system messages
Secure supplies and resources
Follow processing procedures for each application/job
Run application/job
Describe scheduling priority
Describe transmittal form and transmittal log
Develop an audit trail
Handle materials and equipment in a responsible manner
Use electronic data interchange (EDI)

Competency: Maintain computer systems

Competency Builders:

Monitor system status and performance
Run diagnostics
Report computer system malfunction(s)
Report software malfunction(s)
Fix recoverable problems
Maintain security
Maintain computer log
Perform backup procedure(s)
Perform preventive maintenance
Follow log-off and power-down procedure(s)
Follow equipment maintenance procedures
Follow quality control procedures
Describe operator duties and job scheduling

Competency: Maintain security requirements

Competency Builders:

Apply business ethics
Follow security rules, regulations, and codes
Implement security procedures
Document security procedures
Perform security checks

Competency: Explain operation of peripheral devices

Competency Builders:

Identify peripherals and operating requirements of each
Identify primary devices used for personal computer auxiliary storage
Describe how data is stored on diskettes and hard drives
List speed and storage capacities of computer auxiliary storage devices
Describe attributes of diskettes and hard disks regarding speed and storage capacity
List types of disk storage used with large computer systems
Define role of tape storage in relation to personal and large computers
Describe security issues
Explain purpose of input devices (e.g., keyboard, mouse, scanners, pens, bar code readers, credit/debit/smart cards, voice, video, gloves, joysticks)
Describe operation of output devices (e.g., voice, speaker output devices, printers, plotters, printer sharing units, SCSI interface, video display)
Describe operation of multimedia (e.g., video, audiosound)
Describe operation of storage devices (e.g., tape, disk, CD-ROM)

Competency: Operate peripheral devices

Competency Builders:

Use appropriate reference materials
Load media devices
Start media devices
Unload media devices
Import, edit, and export video and audio
Set up print devices
Operate scanner devices
Operate print devices
Maintain print devices
Monitor peripheral equipment operations
Perform routine maintenance on peripheral devices
List appropriate control procedures
Demonstrate output processing, bursting, decollating, splitting, and shredding
Transmit via modem
Receive via modem
Search a CD-ROM library
Print information from a CD-ROM library
Describe device driver

Competency: Store media

Competency Builders:

Identify need for data library
Use appropriate reference materials
Retrieve stored media (e.g., on-line, off-line, permanent, off-site)
File stored media (e.g., on-line, off-line, permanent, off-site)
Initialize media
Catalog media
Maintain supplies
Maintain media library
Maintain backup records
Maintain company and/or government standards for media security
Maintain archives of company records required by policy or law

Competency: Maintain microcomputers

Competency Builders:

Use appropriate reference materials
Install PC
Change hardware
Set up system configuration
Install software packages
Respond to system messages
Run software applications
Back up systems
Restore systems
Report computer malfunction(s)
Report software malfunction(s)
Perform preventative maintenance

Competency: Explain operating systems

Competency Builders:

Identify operating systems and their attributes
Describe how commands handle tasks in operating systems
Describe various input/output systems
Describe the purpose of operating system utilities
Differentiate between a compiler and an interpreter
Describe the processing that occurs when an interpreter is used
Describe the processing that occurs when a compiler is used

Unit: Software Methodology

Competency: Solve fundamental software methodology problems

Competency Builders:

Explain basic concepts of algorithm development and programming
Use commands to implement algorithmic solution
Create test data for algorithmic solution
Test reliability of implementing algorithmic solution
Complete project (given formal specifications) requiring incorporation of control structures
Explain principles of program design (e.g., structure, object oriented, event driven)
Solve problems involving basic control structures (e.g., sequence, selection, iteration)
Describe different data types (e.g., numeric, alphanumeric)
Explain software design process (i.e., specification through implementation and testing)
Resolve issues of program implementation (e.g., debug, documentation, audit)

Competency: Describe tools used to design software systems

Competency Builders:

Explain modular design and programming, including specifications and design tools
Explain module (i.e., subroutine) implementation
Explain module testing
Explain module documentation
Explain module maintenance
Explain data normalization as used in defining databases
Explain computer-aided software engineering (CASE)
Explain object-oriented programming (OOP)
Differentiate build versus buy decisions

Competency: Develop software requirements

Competency Builders:

Use interviewing strategies to gather information
Describe different system design models (e.g., client server, centralized)
Identify system requirements
Develop informal specifications
Develop formal specifications
Develop documentation
Apply computing standards and methodologies
Apply security measures

Competency: Design software

Competency Builders:

Explain and/or chart process design
Write software (e.g., top-down, module testing)
Debug software system
Trace software system
Test software system and data
Apply computing standards
Apply security measures
Obtain customer approval

Unit: Operating Systems

Competency: Describe operating systems

Competency Builders:

Describe microcomputer operating systems
Describe minicomputer operating systems
Describe mainframe operating systems
Describe network operating systems
Describe how commands handle tasks in operating systems
Describe various input/output systems
Describe the purpose of operating system utilities
Differentiate between a compiler and an interpreter
Describe the processing that occurs when an interpreter is used
Describe the processing that occurs when a compiler is used

Competency: Explain central processing unit (CPU) control

Competency Builders:

Explain CPU processes
Explain CPU concurrency
Explain CPU scheduling
Explain CPU multitasking
Explain CPU multiprocessing

Competency: Describe memory management

Competency Builders:

Describe functions of primary memory
Describe functions of virtual memory (e.g., paging, segmentation)
Describe functions of extended memory
Describe functions of expanded memory
Describe functions of cache memory

Competency: Explain auxiliary storage management

Competency Builders:

Explain storage management software
Identify auxiliary storage media
Describe operational characteristics of storage media
Describe storage capacities of storage media
Describe retrieval methods of storage media
Differentiate between files and directories
Differentiate among management devices (e.g., disk, tape, CD-ROM)
Explain redundant array of inexpensive disks (RAID)
Explain mirroring concepts

Competency: Store media

Competency Builders:

Identify need for data library
Use appropriate reference materials
Retrieve stored media
File stored media
Initialize media
Catalog media
Maintain supplies
Maintain media library
Maintain backup records
Maintain company and/or government standards for media security
Maintain archives of company records required by policy or law

Competency: Explain security issues

Competency Builders:

Define backup and recovery
Explain disaster planing
Define authentication (e.g., passwords, access level)
Describe encryption techniques
Describe viruses and worms
Describe vaccines
Explain operating system penetration

Competency: Maintain security requirements

Competency Builders:

Implement security procedures
Apply business ethics
Follow security rules, regulations, and codes
Document security procedures
Perform security checks

Competency: Define open system concepts

Competency Builders:

Differentiate between proprietary and open system architecture
Explain X/OPEN
Explain purpose of Open Software Foundation
Explain purpose of UNIX International
Explain purpose of Corporation for Open Systems International
Identify the OSI Model

Competency: Operate system

Competency Builders:

Review automated scheduling software
Define job, batch, and job step
Describe data requirements
Use appropriate reference materials
Perform power-up and log-on procedures
Demonstrate basic programming skills
Use console device to interact with and respond to system messages
Secure supplies and resources
Follow processing procedures for each application/job
Run application/job
Describe scheduling priority
Describe transmittal form and transmittal log
Develop an audit trail
Handle materials and equipment in a responsible manner

Competency: Maintain system

Competency Builders:

Use appropriate reference materials
Monitor system status and performance
Run diagnostics
Respond to system messages
Report computer system malfunction(s)
Report software malfunction(s)
Fix recoverable problems
Maintain security
Maintain computer log
Perform backup procedure(s)
Perform preventative maintenance procedures
Change hardware
Install software packages
Restore system
Follow log-off and power-down procedure(s)

Competency: Administer system

Competency Builders:

Manage complete system
Manage network
Manage operating system
Manage applications

Unit: Application Programming and Design

Competency: Explain computer applications

Competency Builders:

Explain hardware component functions
Explain uses of a computer
Describe major events in the development of computers
Describe major types of software and their functions
Read computer publications
Interpret computer trends
Describe batch processing
Describe interactive processing
Describe ad hoc reporting

Competency: Develop computer applications

Competency Builders:

Use appropriate reference materials
Analyze specifications
Divide design specifications into logical blocks (e.g. flowchart, data flow diagram, system flows record and layout)
Identify constraints
Identify programming language
Identify input and output (I/O) requirements
Prepare logic using program-flow diagram

Competency: Explain programming theory

Competency Builders:

Explain the meaning of "reserved word"
Describe arrays and tables
Explain compilers
Differentiate between system documentation and user documentation
Describe what is meant by top-down design and structured programming
Identify the steps in the program development cycle
Design a decision table for a specified problem
Identify the steps and procedures required to develop test data
Explain the difference between recursion and iteration
Describe what is meant by data validation
Describe what is meant by "object oriented" programming

Competency: Apply programming theory

Competency Builders:

Demonstrate use of working storage variables
Write source code per standards
Use spacing charts to plan program output
Code a modular program
Interpret a simple hierarchy chart
Interpret a simple pseudocode design
Create a flow-chart
Perform program sorts
Demonstrate use of loops
Demonstrate use of logical operators (e.g., AND, OR, NOT)
Code error-handling techniques
Demonstrate use of data files

Competency: Explain programming languages

Competency Builders:

Outline history of programming languages
Identify primary use of programming languages and their weaknesses
List rules for naming variables

Competency: Use programming language

Competency Builders:

Perform character manipulation
Declare variables
Initialize variables
Modify variables
Demonstrate a function
Demonstrate a library
Demonstrate a subroutine
Demonstrate system calls
Apply conditional statements
Evaluate series of logical expressions
Code separate addition, subtraction, multiplication, and division statements
Declare a one-dimensional array
Initialize an array
Generate executable code

Competency: Use operating system

Competency Builders:

Apply appropriate text editor
Apply operating system commands
Apply operating system utilities

Competency: Test programs

Competency Builders:

Explain debugging statements
Perform debugging functions
Debug compilation errors
Create test data that checks logic and error routines
Execute program with test data
Correct execution errors
Perform unit and integration test
Analyze test results
Define auto testing software

Competency: Apply programming skills

Competency Builders:

Demonstrate knowledge of file and table processing
Develop program using data validation techniques
Develop interactive process
Develop menu-driven program
Develop database program
Develop program that utilizes a recursive process
Develop program using copy libraries
Develop program using system calls
Develop program using design tool

Competency: Develop documentation

Competency Builders:

Prepare program documentation
Prepare user documentation
Prepare data-flow diagrams
Update design documentation

Competency: Demonstrate knowledge of the systems design process

Competency Builders:

Identify processing requirements
Identify programming language
Use appropriate reference materials
Describe role of user and management in the development of a computer system
Describe use of data flow diagrams, system flowcharts and display screen layout forms
Conduct interviews
Design system inputs and outputs and processes
Create design documentation
Present system design

Competency: Evaluate system

Competency Builders:

Identify evaluation criteria
Develop test plan
Analyze test data
Present results
Recommend corrective action, if appropriate
Explain iterative nature of system evaluation

Competency: Implement system

Competency Builders:

Identify implementation plan
Identify conversion method
Train personnel
Present implementation plan

Unit: Network Operations

Competency: Explain communication standards

Competency Builders:

Identify the seven layers of the International Organization Standard's Open System Interconnection (OSI) Model
Describe each OSI layer, including their interconnectivity
Identify software standards for subnet, presentation layers, and file servers

Competency: Describe network structures

Competency Builders:

Differentiate topologies (e.g., hierarchical, ring, star)
Differentiate architecture(s)
Explain layering
Describe protocols (e.g., TCP/IP, IPX/SPX, etc..)
Describe frame types (e.g., SNA<802.3, 802.5)
Define local area network
Define different types of LANs
Differentiate between network operating systems and data distribution systems
Identify advantages and disadvantages of various LAN operating systems
List duties of LAN supervisor

Competency: Explain network transmission and media

Competency Builders:

Explain signals
Explain patterns
Explain error detection and correction
Explain speed of transmission
Explain use of media
Explain use of equipment
Explain role of network manager

Competency: **Explain network connectivity and interoperability**

Competency Builders:

Identify equipment connecting devices
Differentiate between sync and async devices
Identify software connecting devices
Identify media connecting devices
Identify type of interoperability (e.g., peer-to-peer, peer-to-host)
Identify problems of mixed vendor network implementation
Describe internetworking solutions
Describe cabling schemes and alternatives
Identify network topologies
List pros and cons of network interface cards
List pros and cons of network servers
Explain why internetting is useful or necessary
Describe levels at which internetting can occur
Identify protocols used for remote interconnecting and when each should be used
List common pitfalls when networking computers
Identify method used to evaluate emulators
Describe gateways (e.g., mainframe, protocol)

Competency: **Describe network operating systems**

Competency Builders:

Identify responsibilities of a network operating system
Explain installation procedure for network operating systems
Explain commands needed to use network operating systems
List characteristics of a network interface card (NIC)
Define criteria used to describe network servers
Define criteria used to evaluate network operating systems

Competency: **Describe potential networking problems with applications software**

Competency Builders:

Describe potential hard disk compatibility problems
Differentiate between site multi user and single user licenses
Describe necessary precautions included in programs used on networks

Competency: Explain network management

Competency Builders:

List steps in mapping a network
Explain why files must be organized according to owners, users, and privileges
Describe common standards for setting up and naming files
List criteria used to determine if a file should be network accessible
Identify methods to increase performance
Define hierarchical directory
Explain methods used to determine how many servers should be used
State reasons for channel and cable bottlenecks

Competency: Explain network security

Competency Builders:

Explain need for data protection
Identify common backup devices
Explain criteria for selecting a tape system
Differentiate between hard and soft errors
Contrast streaming and file-by-file backup systems
Explain process for archiving files
Explain necessity for network security
Identify levels of network sedulity and reasons for their existence

Competency: Explain installation procedures

Competency Builders:

Explain why an installation log is necessary
Identify methods of distributing cable, including modeling examples
Identify problems associated with cable installation
Describe types of cable, cable connectors, and grounding techniques
Explain cable testing and tolerance levels
Identify sources of interference and include methods to overcome each

Competency: Use network knowledge

Competency Builders:

Use electronic/voice/multi-media mail
Share files
Use dial-in access
Make backups
Share resources
Explain software control
Apply security and authentication

Competency: Apply network operations

Competency Builders:

Assess user needs to determine which LAN operating systems to use
Demonstrate applications used on LANs
Describe how the network protocols work together
Operate the system in a multi-user environment
Demonstrate knowledge of various networks and compatibility
Differentiate among various topologies
Identify which network operating system to use
Build synchronous transmission circuit using a modem
Build synchronous transmission circuit using a modem
Connect PCs to form a network
Connect two PCs networks
Perform file to file copy in a PC network
Implement print queue in a PC network
Configure file server in a PC network
Connect PC to mini or mainframe
Link mixed vendors (e.g., PC to Mac)
Interconnect via backbone network
Build small ethernet or token ring network

Competency: Administer network

Competency Builders:

Use appropriate reference materials
Apply current LAN concepts and technology
Attach computers and peripherals to LAN
Change computer hardware
Set up system configuration
Install LAN manager software
Install software packages
Respond to system messages
Troubleshoot system
Run software applications
Back up and restore systems
Perform system analysis
Use security procedures
Perform preventative maintenance
Select access control and security
Outline resource management
Install cabling
Install network
Analyze network operations
Check physical and virtual connections
Modify network
Apply standards
Acquire licensing
Plan disaster recovery
Address protocols (e. g., ethernet, token ring, Arcnet)
Monitor network activity/performance

Competency: Perform network maintenance and diagnostics

Competency Builders:

Execute network diagnostics program for software
Execute network diagnostics program for hardware
Apply standard and protocols
Document action(s) taken

Unit: Basic Mainframe Concepts

Competency: Describe mainframe operations

Competency Builders:

Identify types of mainframe memory
Identify data storage techniques used by mainframe operation
Explain how data is stored in mainframe computer memory
Explain how a mainframe computer system executes program instruction
Explain mainframe storage capacity

Competency: Describe interface techniques

Competency Builders:

Identify elements of mainframe user interface
Identify mainframe hardware components and their advantages and disadvantages
Trace evolution of user interface software for mainframe
Illustrate various forms of mainframe menus
Describe mainframe graphical user interface (GUI)

Competency: Explain information processing cycle

Competency Builders:

Define mainframe operating systems
Define data processing terminology
Describe the difference between data files and program files
Differentiate between internal and external commands
Differentiate among interactive, transaction-oriented, and batch processing
Describe processing capabilities of computer operations
Specify roles of systems, procedures, and personnel in mainframe information processing
Explain functions of input, output, revision, distribution, storage, and reproduction

Competency: Explain purpose of mainframe database systems

Competency Builders:

Define mainframe database
Explain terms used in mainframe database systems
Describe common function of mainframe database systems

Competency: Use mainframe database system

Competency Builders:

Enter data into database and sort
Enter data into database and retrieve
Enter data into database and select
Prepare formatted business forms using mainframe database

Unit: Computer Hardware Design

Competency: **Explain standards**

Competency Builders:

Identify OSI, IEEE, ISO, and CCITT standards
Identify standard setting bodies and their proclamations
Explain conformance and APIs

Competency: **Describe computational site environment**

Competency Builders:

Identify environmental requirements
Identify power requirements and power supplies
Identify ergonomic issues
Identify structural capacities
Identify local codes

Competency: **Differentiate among architecture and processor types**

Competency Builders:

Describe architecture and processors of microcomputers
Describe architecture and processors of minicomputers
Describe architecture and processors of mainframes
Explain instruction sets

Competency: Analyze computer systems architecture

Competency Builders:

Describe the principles and operation of addresses and interrupts
Describe the principles and operation of volatile and non-volatile memory
Describe the principles and operation of advanced memory techniques
Define individual system blocks
Draw systems configuration in block detail
Interpret computer acronyms
Describe priorities and interrupts at systems level
Identify direct memory access data handling system(s)
Define functions of advanced memory techniques (e.g., virtual, pipeline, cache)
Describe how commands handle tasks in operating systems
Describe various input/output systems
Describe the purpose of operating system utilities
Differentiate between a compiler and an interpreter
Describe the processing that occurs when an interpreter is used
Describe the processing that occurs when a compiler is used

Competency: Describe operation of chips and boards

Competency Builders:

Describe chip configuration and structure
Describe operation of memory boards, including chip sizes
Describe operation of mother boards
Describe operation of compressor boards (e.g., math, graphics, FAX, modems, voice)
Describe operation of controller cards
Describe operation of network interface cards
Describe operation of PCMCIA

Competency: Describe operation of connectivity devices

Competency Builders:

Describe operation of baluns
Describe operation of multiplexers, MODEMS, CODECS, DSU
Describe operation of switches, gateways, bridges, routers, brouters, and repeaters
Describe operation of test equipment (e.g., protocol analyzers)

Competency: **Explain operation of microprocessor systems**

Competency Builders:

Describe essential components of microprocessor and their functions
Describe principles and operation of BUS concepts (e.g., VESA, EISA)
Describe principles and operation of types of memory circuits
Identify operating systems (e.g., DOS, OS/2, UNIX) and their attributes
Describe microprocessor instructions sets
Describe principles and operation of microprocessor machine code
Demonstrate use of microprocessor machine code
Decode microprocessor machine code
Identify types of input and output devices and peripherals
Describe principles and operation of storage devices
Interface input and output ports to peripherals
Identify central processing unit building blocks and their uses
Identify levels of computer languages

Competency: **Troubleshoot a microcomputer system**

Competency Builders:

Draw system configuration in block detail
Identify priorities and interrupts at system level
Operate computer system architecture
Repair computer system architecture
Demonstrate use of volatile and non-volatile memory
Repair or replace volatile and non-volatile memory

Competency: **Install computer system (i.e., monitor, keyboard, disk drive, and printer)**

Competency Builders:

Configure system
Verify system
Print copy of root directory to printer
Document system installation

Competency: Explain operation of peripheral equipment

Competency Builders:

Identify types of card and paper-tape equipment and interface controllers
Define printer types and interface controllers
Explain the operation of typical magnetic tape equipment and interface controllers
Describe disk equipment and interface controllers
Define environmental requirements for peripherals and media

Competency: Repair peripheral equipment

Competency Builders:

Troubleshoot and repair disk equipment and interface controllers
Troubleshoot and repair display terminals and interface controllers, including touch screens
Troubleshoot and repair printers and interface controllers, including laser printers
Troubleshoot and repair mouse
Troubleshoot and repair bar code scanner
Troubleshoot and repair CD-ROM

Competency: Explain communication interfacing

Competency Builders:

Identify EIA, IEEE and CCITT standards
Differentiate sync and async devices
Define networking levels or layers
Define protocols
Define packet switching
Define multi-user systems

Unit: Supervision

Competency: **Manage human resources**

Competency Builders:

Apply appropriate management and leadership styles
Use foresight to anticipate and manage change
Display managerial and supervisory skills
Apply human relations skills
Develop management objectives
Create and/or implement organizational charts
Clarify company policies and procedures
Maintain office procedures manual(s)
Establish office procedures
Prepare and/or monitor budgets
Prepare managerial reports
Analyze production reports
Maintain appropriate work environment
Conduct tours
Monitor progress
Prepare and communicate productivity reports
Provide and/or coordinate training for new policies
Troubleshoot office problems
Communicate performance expectations
Counsel employees about career objectives
Maintain performance records
Adhere to company policies regarding discrimination and harassment
Address employees regarding disciplinary action(s)
Recommend employees for promotion
Explain procedure for handling grievances
Evaluate employee performance
Document personnel issues

Competency: Manage projects

Competency Builders:

Conduct needs analysis
Set priorities
Research information
Develop goals and objectives
Develop strategic plan
Develop project budget
Apply forecasting techniques
Apply prioritizing techniques
Schedule work assignments
Collect data
Analyze data
Act on data
Monitor project progress
Meet project timelines
Monitor budget
Apply quality measures and counter measures

Competency: Manage work flow

Competency Builders:

Plan office layout for workflow
Create organizational charts
Communicate operating policies and procedures
Maintain office procedures manual(s)
Identify production standards
Interface with other departments
Prioritize work
Assign work
Delegate work
Provide instruction
Monitor progress
Complete productivity and/or managerial reports
Complete assigned tasks in a timely manner
Coordinate with team members

Competency: Conduct staff/team meetings

Competency Builders:

Plan meeting
Set agenda
Set and schedule meeting
Schedule meeting room
Invite appropriate personnel
Identify need for outside speakers
Assign someone to take minutes
Make introductions
Invite questions and comments, and group participation
Focus on agenda items, but maintain issues list as they arise
Decide appropriate action, time frame, and accountability to tasks
Monitor time
Close meeting on time
Publish minutes in timely manner to appropriate persons

Competency: Conduct training

Competency Builders:

Secure training resources, materials, and equipment
Assess training needs
Train employees
Evaluate progress
Provide appropriate feedback
Document training participation

Microcomputer Applications Specialist

NOTE: Each TCP should respond to labor market demands in your area. Therefore, the following pages should be examined before being selected for use in TCP Part I (See "The TCP Process" Tab). For example, some units may not apply to your situation, nor might all the competencies within each unit be appropriate. Also, note that several units appear within each of the twelve occupations in this binder. Those "common" units should only appear once in the draft competency list for TCP Part I if you are compiling several occupations in a cluster format (See "TCP Matrix" Tab).

Units to Consider:	**Page**
Employability Skills	MA-3
Professionalism	MA-8
Teamwork	MA-12
Professional and Ethical Standards	MA-14
Economic and Business Principles	MA-16
Customer Relations	MA-20
Problem Analysis	MA-21
Project Management	MA-22
Technical Documentation	MA-23
Basic Personal Computer Concepts	MA-24
Packaged PC Applications	MA-26
General Office Functions	MA-31
Office Technology	MA-37
General Accounting Functions	MA-40
Application Programming and Design	MA-45
Supervision	MA-50

DON'T FORGET TO INSERT YOUR ACADEMIC COMPETENCIES HERE

Communications Literacy, Mathematics Literacy, Science Literacy, and Technology Literacy have been removed so that you may insert your own academic lists here.

COMMUNICATIONS LITERACY

(e.g., Reading, Writing, Speaking, and Listening)

MATHEMATICS LITERACY

(e.g., Algebra, Geometry, Trigonometry, Calculus)

SCIENCE LITERACY

(e.g., Physical Science, Environmental Science, Agriscience, Biology, Chemistry, Physics, Anatomy & Physiology)

TECHNOLOGY LITERACY

(i.e., the impact of technology on humans and their home, work, and play environments)

Unit: Employability Skills

Competency: Develop a career plan

Competency Builders:

Identify current interests and aptitudes
Identify common barriers to employment
Describe strategies to overcome employment barriers
Locate resources for finding employment
Research job trends
Identify career options
Identify advantages and disadvantages of career options (in addition to other than monetary)
Identify job requirements
Investigate education/training opportunities
Evaluate personal strengths and weaknesses

Competency: **Prepare for employment**

Competency Builders:

Identify traditional and non-traditional employment sources
Identify present and future employment opportunities (by geographic location)
Research job opportunities, including non-traditional careers
Compare salary ranges and benefit packages
Compile occupational profile
Identify rights and responsibilities of equal employment opportunity laws
Design resume and cover letter
Target resume
Secure references
Investigate generic and specific employment tests (e.g., civil service exam; drug screening)
Use follow-up techniques to enhance employment potential
Demonstrate legible written communication skills using correct grammar, spelling, punctuation, and concise wording
Describe methods for handling illegal questions on job application forms and during interviews
Write letter of application
Research prospective employer and services performed
Explain critical importance of personal appearance, hygiene, and demeanor
Interpret job description
Demonstrate appropriate interview question and answer techniques
Demonstrate methods for handling difficult interview questions
Evaluate job offers
Write letter of acceptance
Write letter of declination
Demonstrate good listening skills
Ask for the job tactfully
Participate in extracurricular activities (e.g., student government, community projects,)

Competency: **Evaluate the importance of self-esteem as an employability skill**

Competency Builders:

Identify factors that affect self-esteem
Compare effects of low self-esteem and high self-esteem
Identify strategies to promote positive self-esteem

Competency: Demonstrate job retention skills

Competency Builders:

Identify employer expectations regarding job performance, work habits, attitudes, personal appearance, and hygiene
Exhibit appropriate work habits and attitude
Demonstrate ability to set priorities
Identify behaviors to establish successful working relationships
Identify alternatives for dealing with harassment, bias, and discrimination based on race, color, national origin, sex, religion, handicap, or age
Identify opportunities for advancement
List reasons for termination
List consequences of being absent frequently from job
List consequences of frequently arriving late for work
Demonstrate interpersonal relations skills (i.e., verbal and written)
Demonstrate negotiation skills
Demonstrate teamwork
Follow chain-of-command
Exhibit appropriate job dedication

Competency: Demonstrate knowledge of work ethic

Competency Builders:

Define work ethic
Identify factors that influence work ethic
Differentiate law and ethics
Describe how personal values are reflected in work ethic
Describe how interactions in the workplace affect personal work ethic
Describe how life changes affect personal work ethic

Competency: Exhibit appropriate work ethic

Competency Builders:

Use time-management techniques
Avoid personal activity during work hours
Attend work as scheduled
Adhere to company and/or governmental policies, procedures, rules, and regulations
Exercise confidentiality
Demonstrate appropriate human relations skills
Adhere to rules of conduct
Accept constructive criticism
Offer constructive criticism
Take pride in work
Resolve conflict
Manage stress
Avoid sexual connotations and harassment
Adjust to changes in the workplace
Demonstrate punctuality
Assume responsibility for personal decisions and actions
Take responsibility for assignments
Follow chain-of-command

Competency: Apply decision-making techniques

Competency Builders:

Identify decision to be made
Identify ownership of decision to be made
Identify possible alternatives and their consequences
Make decisions based on facts, legality, ethics, goals, and/or culture
Apply time factor(s)
Present decision to be implemented
Evaluate decision made
Take responsibility for decision

Competency: Apply problem-solving techniques

Competency Builders:

Identify problem
Select appropriate problem solving tools/techniques
Identify root problem cause(s)
Track root problem cause(s)
Identify possible solutions and their consequences (e.g., long term, short term crisis)
Use resources to explore possible solutions to problem
Contrast advantages and disadvantages of each solution
Identify appropriate action
Evaluate results
Identify post-preventive action

Competency: Exhibit characteristics for job advancement

Competency Builders:

Display positive attitude
Demonstrate knowledge of position
Perform quality work
Adapt to changing situations and technology
Demonstrate capability/responsibility for different positions
Identify characteristics of effective leaders
Identify opportunities for leadership in work place/community
Demonstrate initiative to affect change in workplace
Participate in continuing education/training program
Responds appropriately to criticism from employer, supervisor, or other employees
Exhibit awareness of corporate culture
Prepare for job setbacks
Exhibit continual growth based on performance evaluation
Set realistic goals

Unit: Professionalism

Competency: Project professional image

Competency Builders:

Define professionalism
Exhibit professional appearance
Exhibit professional manners
Project professional attitude
Identify individuals' vital role in organization
Exhibit proper etiquette in professionally-related situations

Competency: Achieve individual and professional goals

Competency Builders:

Set flexible, realistic, and measurable goals
Identify potential barriers to achieving goals
Identify strategies for addressing barriers to goal achievement
Breakdown long-term goals into short-term goals
Prioritize goals
Commit to goals
Adjust goals
Obtain support for goals
Reward goal achievement

Competency: Manage personal finances

Competency Builders:

Explain need for personal management records
Balance checkbook
Identify tax obligations
Analyze how credit affects financial security
Compare types and methods of investments
Compare types and methods of borrowing
Compare types and methods of insurance
Compare types of retirement options/plans
Identify discriminatory vs. non-discriminatory expenditures

Competency: Support community well-being

Competency Builders:

Identify environmental, educational, and social issues
Participate in social and/or community activities

Competency: Achieve organizational goals

Competency Builders:

Evaluate personal goals in relation to organizational goals
Monitor progress by evaluating feedback
List responsibilities in relation to organization goals
Accomplish assigned tasks
Exercise responsibility in relation to organizational goals
Set appropriate personal performance standards
Communicate goals with supervisor and peers
Demonstrate knowledge of products and services
Promote organizational image and mission

Competency: Demonstrate positive relations in the workplace

Competency Builders:

Identify personality types of self and other
Identify various management styles
Support employer expectations
Support employer decisions
Accept constructive criticism
Give constructive feedback
Adapt to changes in workplace
List factors to consider before resigning
Write letter of resignation

Competency: **Manage stressful situations**

Competency Builders:

Accept stress as part of daily life
Identify personal and professional factors contributing to stress
Describe physical and emotional responses to stress
Evaluate positive and negative effects of stress on productivity
Identify strategies for reducing stress
Implement strategies to manage stress
Create strategies for developing and maintaining support systems

Competency: **Analyze effects of family on work and work on family**

Competency Builders:

Identify how family values, goals, and priorities are reflected in work place
Identify responsibilities and rewards associated with paid and non-paid work
Identify responsibilities and rewards associated with families
Explain how family responsibilities can conflict with work
Explain how work can conflict with family responsibilities
Explain how work-related stress can affect families
Explain how family-related stress can affect work
Identify family support systems and resources
Identify work-related support systems and resources
Communicate with family regarding work

Competency: **Apply lifelong learning skills**

Competency Builders:

Define lifelong learning
Identify factors that cause need for lifelong learning
Analyze effects of change
Identify reasons why goals change
Describe importance of flexibility and adaptability
Evaluate need for continuing education/training

Competency: **Manage professional development**

Competency Builders:

Identify career opportunities
Modify career plan
Participate in continuing education/training opportunities
Document continuing education/training
Read profession-related manuals, technical journals, and periodicals
Attend meetings, workshops, seminars, conferences, and demonstrations
Participate in professional organizations
Build personal/professional mentor relationship
Build personal/professional support system
Build professional network
Strengthen communication skills
Strengthen leadership skills
Strengthen management skills

Unit: Teamwork

Competency: Demonstrate knowledge of teamwork

Competency Builders:

Define empowerment
Differentiate work groups and teams
Identify conditions essential to teamwork (e.g., brainstorming)
Explain influence of culture (e.g., corporate, community) on teamwork
Identify appropriate situations for using teams
Define team structures (e.g., cross functional, quality improvement, task force, quality circles)
Identify team building concepts
Describe characteristics and dynamics of teams
Identify characteristics of effective team leaders and members
Identify responsibilities of a valuable team member
Identify methods of involving each member of a team
Explain how individuals from various backgrounds contribute to work-related situations (e.g., technical training, cultural heritage)
Explain the purpose of facilitators
Define consensus
Define reward/recognition system

Competency: Demonstrate teamwork

Competency Builders:

Identify purpose of team and intended goal (include time frames)
Structure team around purpose
Define responsibilities of team members
Contribute to efficiency and success of team
Work toward individual and team milestones
Analyze results of team project
Facilitate a team meeting
Assist team member(s) with problem
Monitor time frame
Stress continuous improvement
Accept failure as part of learning

Competency: Use teamwork to solve problems

Competency Builders:

Identify appropriate situations for using teams
Use problem-solving process in a team setting
Identify quality management processes/techniques
Identify quality assurance processes/techniques
Prepare presentation

Competency: Conduct team meetings

Competency Builders:

Plan agenda
Schedule meeting and location
Invite appropriate personnel
Solicit outside speakers as needed
Assign someone to take minutes
Facilitate introductions
Invite questions and comments and group participation
Focus team on agenda items
Assign appropriate action, time frame and accountability to tasks
Monitor time
Close meeting on time
Publish minutes in timely manner
Set ground rules
Avoid placing individual agendas above the group's agenda

Unit: Professional and Ethical Standards

Competency: Explain professional responsibilities

Competency Builders:

Explain the need for professional and ethical standards
Explain responsibility of the individual to apply ethical standards
Identify responsibility to client(s) or employer(s)
Explain employer's consequences of unprofessional and/or unethical employee behavior
Identify responsibility to self (e.g., professional appearance and limitations) and to profession
Explain importance of conflict resolution in the workplace

Competency: Describe self-managed employees

Competency Builders:

Explain the need for organizing tasks
Explain management-by-objectives
Explain importance of planning, both long-term and short-term
Explain importance of evaluating progress
Explain importance of reporting progress
Explain time management
Explain the benefit of creative brainstorming and innovative thinking

Competency: Describe intellectual property

Competency Builders:

Explain legal ownership of proprietary assets produced by the computing professional
Explain public policy
Explain rights of the originator
Explain rights of the public
Explain patent
Explain copyright
Explain licenses
Explain confidentiality

Competency: **Apply professional and ethical standards**

Competency Builders:

Identify computing industry's standards
Describe computing industry's code of ethics
Explain various ethics established by computing societies
Apply various ethics established by computing societies

Unit: Economic and Business Principles

Competency: Describe basic economic concepts

Competency Builders:

Identify importance of economic resources
Explain concept of economic resources
Explain importance of economic resources
Explain concept of economic goods and services
Differentiate between economic goods and services
Differentiate between needs and wants
Explain concept of supply and demand
Explain concept of price
Explain how supply, demand, and price are related
Explain concept of private enterprise and business ownership
Explain concept of profit
Explain concept of risk
Explain concept of competition
Explain relationship among risk, competition, and profit

Competency: Conduct training

Competency Builders:

Secure training resources, materials, and equipment
Assess training needs
Train employees
Evaluate progress
Provide appropriate feedback

Competency: Evaluate economic systems

Competency Builders:

Compare types of economic systems
Research free enterprise system
Interpret relationship between government and business
Interpret relationship between labor and management

Competency: Illustrate basic economic principles

Competency Builders:

Illustrate global economic and world market applications
Illustrate economic cycles (e.g., unemployment, recession, inflation, budget deficits)
Illustrate economic activity's affect on business (e.g., financial, competitor indicators, industry)

Competency: Analyze cost and profit influences

Competency Builders:

Identify importance of maximizing quality
Identify importance of maximizing productivity
Contrast specialized training and cross training
Contrast labor and management
Contrast government and business

Competency: Illustrate economic indicators and trends

Competency Builders:

Define gross national product and gross domestic product
Interpret impact of interest rates
Interpret impact of government spending
Interpret impact of seasonal business cycles
Interpret impact of inflation, growth, recession, and unemployment
Interpret impact of national and world events
Interpret impact of the growth of international trade

Competency: Explain basic international trade concepts

Competency Builders:

Explain nature and importance of international trade
Contrast advantages and disadvantages of marketing in international trade
Explain balance of trade concepts
Describe impact of foreign investment

Competency: **Explain basic business concepts**

Competency Builders:

Identify functions of business
Explain role of management
Explain role of labor
Explain concept of service as a product
Explain role of administration
Explain role of operations
Identify role of company objectives
Identify importance of ethical business practices
Identify types of ownership
Identify components of a business plan

Competency: **Summarize business principles**

Competency Builders:

Explain business organizations and functions
Describe business reporting and information flow
Map interface of departmental functions
Identify communication channels (e.g., formal, informal)
Explain total quality management (TQM) principles

Competency: **Illustrate legal concepts**

Competency Builders:

Define legal terminology
Explain business law concepts
Interpret contracts and/or legal documents
Explain relationship of laws and regulations to company contracts, policies, and procedures
Explain laws relating to working conditions, wages and hours, civil rights, social security, disability, and unemployment insurance

Competency: Explain role of marketing

Competency Builders:

Explain aspects of sound business image
Identify purposes of marketing
Identify functions of marketing
Describe effects of marketing
Explain product/service variety
Identify target markets
Define sales potential
Explain pricing strategies
Differentiate advertising campaigns
Explain advantages and disadvantages of advertising agencies
Describe sales incentive programs
Maintain marketing feedback and make appropriate changes
Identify types of marketing strategies and the advantage and disadvantage of each (e.g. phone, mail, person)
Design monitor plan

Competency: Serve customers/clients

Competency Builders:

Identify importance of customer
Identify customer services to provide
Relate to customers in timely fashion
Identify customer needs and wants
Gather complete and accurate information
Apply customer service concepts and terminology
Identify methods for addressing dissatisfied customers

Unit: Customer Relations

Competency: Demonstrate positive relations with customers

Competency Builders:

Identify importance of customers to business
Differentiate between customer needs and wants
Provide prompt and courteous service
Resolve customer inquiries and complaints and/or refer customer to appropriate person
Identify methods of addressing dissatisfied customers

Competency: Perform scheduling functions to meet customers needs

Competency Builders:

Create calendar/schedule
Maintain appointment calendars
Process requests for appointments
Verify appointments
Notify customer of changes in schedule
Manage scheduling conflicts

Unit: Problem Analysis

Competency: Appraise situations

Competency Builders:

Identify concerns
Classify concerns
Set priorities
Identify resolution process
Plan resolution

Competency: Analyze potential problems

Competency Builders:

Identify potential problems
Identify likely causes
Identify preventive actions
Identify contingent actions

Competency: Analyze actual problems

Competency Builders:

Identify deviation
Identify problem and possible causes
Test for probable causes
Verify cause

Competency: Analyze decisions

Competency Builders:

Identify objective(s)
Classify objective(s)
Identify alternatives
Evaluate alternatives
Assess risks
Make final choice

Unit: Project Management

Competency: Explain project management

Competency Builders:

Identify project purpose/goal
Identify project objectives
Identify work breakdown structure (WBS)
Identify resource requirements

Competency: Plan projects

Competency Builders:

Apply responsibility assignment matrix (RAM)
Apply Gantt or bar charts
Apply network diagrams
Apply critical path method (CPM)
Apply project education and review techniques
Apply software programs

Competency: Implement projects

Competency Builders:

Monitor project
Control project
Modify project

Competency: Evaluate projects

Competency Builders:

Analyze performance
Close-out project evaluation
Draw project management conclusions

Unit: Technical Documentation

Competency: **Demonstrate proficiency in technical documentation**

Competency Builders:

Identify parameters
Ask questions
Interpret specifications or drawings
Record process (e.g., flowchart, step-by-step)
Record data
Maintain test logs
Compile cumulative reference/record

Competency: **Demonstrate proficiency in technical report writing**

Competency Builders:

Use data books and cross reference/technical manuals
Identify type of report needed
Compile relevant data
Design applicable charts and graphs
Analyze data
Draw conclusions
Outline reports
Write reports
Present reports

Unit: Basic Personal Computer Concepts

Competency: Explain use of personal computers in business

Competency Builders:

Describe the impact of computer use on individuals and businesses
Identify basic applications of computers in business
Identify automated business systems and electronic media
Identify different types and sizes of computers
Define input, processor, output, and storage units
Identify how PCs integrate with other information technologies (e.g., scanners, mainframes)
Describe impact of computer use on individuals and business
Identify basic applications of computers in business

Competency: Describe personal computer operations

Competency Builders:

Explain how data is stored in main computer memory
Explain how a computer system executes program instruction
Explain electronic storage capacity
Explain electronic units of measure and how they represent data
Identify data storage techniques
Identify types of memory
Explain different types of input and output

Competency: Explain information processing

Competency Builders:

Define operating systems
Describe the difference between data files and program files
Demonstrate knowledge of system commands
Define software types and functions
Describe basic disk operation and care
List business applications of software package
List advantages and disadvantages of integrated and dedicated software

Competency: **Demonstrate computer literacy**

Competency Builders:

Identify computer components
Identify parallel versus serial ports
Explain differences between conventional, expanded, and extended memory
Identify use of storage media
List commands that affect disk operation
Use disk operating system to format disks
Originate directories and subdirectories
Explain common configuration variables
Explain device driver concepts
Demonstrate commands that open, close, copy, delete, and rename files on disk
Keyboard document(s) using computer

Unit: Packaged PC Applications

Competency: Explain software applications

Competency Builders:

Describe need for application software
Describe different types of software applications
Explain advantages and disadvantages of various software applications
List software sources
Explain copyright laws for software

Competency: Explain spreadsheet packages

Competency Builders:

Define spreadsheet
Demonstrate knowledge of basic spreadsheet terminology
Define components of spreadsheets
Describe implementation of spreadsheet operations in business scope

Competency: Perform word processing functions

Competency Builders:

Define word processing terminology
Explain functions of word processing software
Explain word processing applications
Use appropriate reference materials
Keyboard efficiently by touch
Use mouse
Initialize diskette
Prepare backup file
Maintain backup file
Update spelling dictionary and spell check
Perform document functions (e.g., locate, rename, delete, save, retrieve, copy)
Perform formatting functions (e.g., set margins and tabs, center, underline, bold, cut and paste)
Use edit features
Use sort features
Add page numbers to document
Add headers and footers
Print files, pages, screens and blocks of text
Verify accuracy of output
Create a document
Save a document to disk
Retrieve a document from disk
Edit an existing document
Describe word-wrap
Print a document
Create glossary file
Store boilerplate material
Compose documents at keyboard
Tabulate multiple columns
Prepare new documents from existing ones
Merge selected copy with new information
Prepare various types of table options
Index text
Format text
Integrate database, spreadsheet and graphic files
Convert documents from one system to another
Demonstrate use of computer thesaurus
Use multimedia techniques/resources

Competency: Use spreadsheet packages

Competency Builders:

Use spell check
Execute an electronic spreadsheet
Enter data, formulas, and functions
Differentiate between labels and numbers
Compare absolute and relative addressing
Speculate using "what if..." questions
Sequence keystrokes in the creation of a macro
Create database within spreadsheet and perform data query functions
Move around in spreadsheet and correct errors
Format spreadsheet
Create graphs
Print graphs
Save previously saved files
Load previously saved files
Replicate cells using copy commands
Use electronic spreadsheet to complete business application
Use spreadsheet to plan financial strategies
Prepare spreadsheet
Use multimedia techniques/resources

Competency: Explain database packages

Competency Builders:

Define database
Explain terms used in database systems
Describe common functions of database systems

Competency: Use database packages

Competency Builders:

Use database package to create, input, edit, and display fields and records
Analyze structure of database files
Perform calculations with a database file
Alter structure of database file
Sort records based on multiple fields
Identify advanced database technology
Use appropriate reference materials
Create relational database
Enter elements into database
Proofread database
Edit database
Design report formats
Apply database management system (DBMS) commands
Print reports using data from multiple databases
Use database files with other application software
Verify accuracy of output (e.g., edit reports)
Use multimedia techniques/resources

Competency: Explain function of shared environments

Competency Builders:

List purposes of a network environment
Define electronic mail
Identify advantages and disadvantages of electronic mail
Describe impact of local and wide area networks on mail delivery

Competency: Use a shared environment

Competency Builders:

Compose electronic messages
Send electronic messages using appropriate format
List categories of electronic mail service
Transmit document using electronic mail system
Monitor electronic mail

Competency: Manage software packages

Competency Builders:

Install software packages
Upgrade software packages
Document installation of software packages
Convert data files

Competency: Perform computer business graphics

Competency Builders:

Define purpose and types of graphics
Use appropriate reference materials
Create graphics
Proofread graphics
Edit graphics
Save graphics
Retrieve graphics
Print graphics to various output devices
Verify accuracy of output
Use graphic functions to create files, input data, process data, and produce output
Use graphics files with other application software

Competency: Use graphic user interface (GUI) techniques

Competency Builders:

Explain multi tasking environment
Setup data exchange between two different applications
Setup an object link between two different applications
Explain the use of dynamic link libraries

Unit: General Office Functions

Competency: Maintain a safe working environment

Competency Builders:

Comply with company safety and health rules and regulations
Use appropriate reference materials
Use equipment correctly
Use appropriate actions during emergencies
Maintain a clean and orderly work area

Competency: Maintain work flow

Competency Builders:

Organize work
Prioritize work
Apply time-management techniques
Complete assigned tasks in a timely manner
Coordinate with team members as needed

Competency: Demonstrate positive relations with customers/clients

Competency Builders:

Identify importance of repeat customers to business
Identify customer needs and wants
Provide prompt and courteous service
Resolve customer inquiries and complaints and/or refer customer to appropriate person

Competency: Perform telephone operations

Competency Builders:

Use appropriate reference materials
Display telephone etiquette
Operate equipment
Route calls
Listen assertively
Verify information
Screen calls
Record messages
Relay messages timely
Place calls
Log long-distance calls
Create telephone directories
Maintain telephone directories
Organize teleconferences
Use voice mail/messaging systems

Competency: Use facsimile machine

Competency Builders:

Explain how a facsimile machine operates
Record information regarding material being sent
Operate facsimile
Verify to sender that process has been completed
File copy of facsimile order
Maintain supplies for facsimile use
Log maintenance needs regarding facsimile

Competency: Assist visitors

Competency Builders:

Greet visitors
Screen visitors
Maintain visitor log
Make appropriate introductions
Portray professional image

Competency: Perform scheduling functions

Competency Builders:

Create calendar/schedule
Maintain appointment calendars
Process requests for appointments
Verify appointments

Competency: Use job-related reference materials

Competency Builders:

Identify reference materials
Assemble reference materials
Abstract information from reference materials
Compile data

Competency: Coordinate meeting arrangements

Competency Builders:

Make arrangements with meeting planners
Distribute agenda
Assemble relevant information
Notify participants
Confirm arrangements

Competency: Generate minutes

Competency Builders:

Record appropriate notes
Gather materials
Prepare minutes
Distribute minutes
File minutes

Competency: Coordinate travel plans

Competency Builders:

Check travel resources
Inquire about traveler's preferences
Arrange necessary transportation and lodging
Obtain passports and/or visas
Confirm arrangements
Prepare itineraries
Distribute itineraries
Alter arrangements

Competency: Perform mail functions

Competency Builders:

Identify various mail and delivery services
Process incoming mail
Distribute mail
Operate equipment
Process outgoing mail

Competency: Maintain office supplies

Competency Builders:

Prepare cost justification for purchasing supplies
Order supplies
Verify supply order against supplies
Store and secure supplies
Distribute supplies
Inventory supplies
Prepare inventory reports

Competency: Perform copying functions

Competency Builders:

Use appropriate reference materials
Operate equipment
Collate documents
Maintain equipment
Identify copying methods
Identify best copying method for task
Identify characteristics of paper stock
Keep appropriate records
Identify appropriate copyright applications

Competency: Maintain filing system

Competency Builders:

Give reasons for keeping records
Identify types of records needed
Develop proper techniques/procedures for maintaining records
Use appropriate reference materials
Describe procedure for initial inventory of records
Organize files
Index files
File information
Retrieve information
Consolidate files
Archive or destroy files
Secure files for legality and confidentiality
Follow retention schedule
Create new files
Update files
Prepare materials for filing
Sort documents
Apply cross-referencing and logging systems
Store documents
Locate documents

Competency: **Maintain hardware and software**

Competency Builders:

Use appropriate reference materials
Evaluate hardware and software
Recommend hardware and software
Schedule routine hardware maintenance
Update software
Report malfunction(s)
Maintain usage logs
Inventory hardware and software

Unit: Office Technology

Competency: **Use telecommunications**

Competency Builders:

Define the role of telecommunications in business
Use appropriate reference materials
Operate telephone systems
Operate fax machines

Competency: **Perform basic word processing functions**

Competency Builders:

Create glossary file
Store boilerplate material
Compose documents at keyboard
Tabulate multiple columns
Prepare new documents from existing ones
Merge selected copy with new information
Prepare various types of table options
Index text
Format text
Integrate database, spreadsheet, and graphics files
Convert documents from one system to another
Demonstrate use of computer thesaurus

Competency: **Perform transcription functions**

Competency Builders:

Identify various types of dictation/transcription equipment
Keyboard documents
Proofread documents
Edit documents
Save documents
Retrieve documents
Print documents

Competency: Use computerized filing system

Competency Builders:

Identify uses for electronic filing system
List advantages and disadvantages of electronic filing
Retrieve information from filing system
Store records electronically
Duplicate records electronically
Transmit records electronically
Maintain financial records

Competency: Perform database functions

Competency Builders:

Identify advanced database technology
Use appropriate reference materials
Create relational database
Enter elements into database
Proofread database
Edit database
Design report formats
Apply database management system (DBMS) commands
Print reports using data from multiple databases
Use database files with other application software
Verify accuracy of output

Competency: Perform desktop publishing functions

Competency Builders:

Define desktop publishing
Explain word processing functions in desktop publishing
Use appropriate reference materials
Use desktop publishing terms
Use desktop publishing software
Use graphic design and layout functions of desktop publishing
Design publications
Merge word-processing, graphics, database, and spreadsheet files
Proofread documents
Edit documents
Save documents
Retrieve documents
Print documents using various output devices

Competency: Perform computer business graphics

Competency Builders:

Define purpose and types of graphics
Use appropriate reference materials
Create graphics
Proofread graphics
Edit graphics
Save graphics
Retrieve graphics
Print graphics to various output devices
Verify accuracy of output
Use graphic functions to create files, input data, process data, and produce output
Use graphics files with other application software

Unit: General Accounting Functions

Competency: Apply arithmetical accounting skills

Competency Builders:

Compute cash discounts for various terms
Compute trade discounts
Compute extension, sales tax, and totals of sales slips
Compute markups and markdowns
Calculate rates of trade and cash discounts
Calculate unit prices given quantity prices
Calculate costs of portions of units
Solve problems involving fractions, decimals, and percentages
Solve commission problems
Solve finance-charge problems
Solve annual percentage rate problems

Competency: Apply accounting principles

Competency Builders:

Define accounting terminology
Define journals and ledgers
Identify basic accounting principles
Identify basic accounting applications
Identify computer accounting applications
Identify financial control procedures
Explain increases and decreases in accounts
Explain periodic reporting procedures
Prepare income statement
Prepare balance sheet columns
Prepare cash flow statement
Interpret balance sheets
Interpret income statements
Interpret cash-flow analysis statements

Competency: Perform manual accounting functions

Competency Builders:

Explain use of record keeping in relation to business and economic applications
Use appropriate reference materials
Analyze transactions
Use "T" accounts to label increases, decreases, and balances
Record transactions
Process receivables
Monitor expense accounts
Process payables
Prepare budgets
Process purchases
Prepare comparative (actual vs. budget) income statement

Competency: Perform automated accounting functions

Competency Builders:

Use appropriate reference materials
Operate equipment
Key data on numeric keyboard
Import or download data from computer records
Scan data from various media
Use integrated software package for simulation of accounting cycle
Set up chart of accounts for general ledger
Set up accounts payable and accounts receivable ledgers
Add accounts to general and subsidiary ledgers
Input account balances
Enter journal transactions
Process journal transaction
Prepare trial balance
Verify data and correct errors
Generate reports
Proofread accounting records and statements
Edit accounting records and statements
Save accounting records and statements
Retrieve accounting records and statements
Print accounting records and statements

Competency: Perform spreadsheet functions

Competency Builders:

Explain computer spreadsheet analysis
Use appropriate reference materials
Operate equipment
Create or format spreadsheet
Enter formulas
Move cells and ranges
Enter data on spreadsheet
Import or download data to spreadsheet
Apply data sort, data query, data fill, and data distribution
Export spreadsheet files to word processing, graphics and database files
Import spreadsheet files to word processing, graphics and database files
Proofread spreadsheet data
Edit spreadsheet data
Verify accuracy of output
Save spreadsheet
Retrieve spreadsheet
Print spreadsheet
Use spreadsheet functions to create files, input data, process data, and produce output
Use spreadsheet files with other application software

Competency: Perform payroll functions

Competency Builders:

Use appropriate reference materials
Collect payroll data
Process payroll
Comply with company policies and procedures
Comply with government and legal requirements
Maintain records and forms
Monitor personnel costs

Competency: Perform banking functions

Competency Builders:

Use appropriate reference materials
Prepare checks, deposit slips, and withdrawal slips
Maintain checkbook
Balance checkbook
Maintain petty cash
Balance petty cash
Explain automated banking transactions
Prepare banking records
Maintain banking records

Competency: Process cost accounting information

Competency Builders:

Define cost accounting, direct materials, direct labor and overhead
Define cost allocation methods
Identify source documents
Compute direct materials by job or process
Compute direct labor by job or process
Compute overhead rates to apply to jobs or processes
Compute cost of goods produced
Compute cost of goods sold
Journalize cost of goods produced and sold entries
Post cost of goods produced and sold entries
Compute cost of inventories
Prepare cost production reports
Prepare related records of job or process costs

Competency: **Process end-of-fiscal-period information**

Competency Builders:

Prepare worksheet
Prepare trial balance
Foot ledger accounts and compute balances
Prove equality of debits and credits
Locate errors
Record adjustments
Make appropriate extensions
Journalize basic adjusting, closing, and reversing entries
Post basic adjusting, closing, and reversing entries
Prepare basic income statement
Prepare basic balance sheet
Prepare basic cash flow statement

Unit: Application Programming and Design

Competency: Explain computer applications

Competency Builders:

Explain hardware component functions
Explain uses of a computer
Describe major events in the development of computers
Describe major types of software and their functions
Read computer publications
Interpret computer trends
Describe batch processing
Describe interactive processing
Describe ad hoc reporting

Competency: Develop computer applications

Competency Builders:

Use appropriate reference materials
Analyze specifications
Divide design specifications into logical blocks (e.g. flowchart, data flow diagram, system flows record and layout)
Identify constraints
Identify programming language
Identify input and output (I/O) requirements
Prepare logic using program-flow diagram

Competency: Explain programming theory

Competency Builders:

Explain the meaning of “reserved word”
Describe arrays and tables
Explain compilers
Differentiate between system documentation and user documentation
Describe what is meant by top-down design and structured programming
Identify the steps in the program development cycle
Design a decision table for a specified problem
Identify the steps and procedures required to develop test data
Explain the difference between recursion and iteration
Describe what is meant by data validation
Describe what is meant by "object oriented" programming

Competency: Apply programming theory

Competency Builders:

Demonstrate use of working storage variables
Write source code per standards
Use spacing charts to plan program output
Code a modular program
Interpret a simple hierarchy chart
Interpret a simple pseudocode design
Create a flow-chart
Perform program sorts
Demonstrate use of loops
Demonstrate use of logical operators (e.g., AND, OR, NOT)
Code error-handling techniques
Demonstrate use of data files

Competency: Explain programming languages

Competency Builders:

Outline history of programming languages
Identify primary use of programming languages and their weaknesses
List rules for naming variables

Competency: Use programming language

Competency Builders:

Perform character manipulation
Declare variables
Initialize variables
Modify variables
Demonstrate a function
Demonstrate a library
Demonstrate a subroutine
Demonstrate system calls
Apply conditional statements
Evaluate series of logical expressions
Code separate addition, subtraction, multiplication, and division statements
Declare a one-dimensional array
Initialize an array
Generate executable code

Competency: Use operating system

Competency Builders:

Apply appropriate text editor
Apply operating system commands
Apply operating system utilities

Competency: Test programs

Competency Builders:

Explain debugging statements
Perform debugging functions
Debug compilation errors
Create test data that checks logic and error routines
Execute program with test data
Correct execution errors
Perform unit and integration test
Analyze test results
Define auto testing software

Competency: Apply programming skills

Competency Builders:

Demonstrate knowledge of file and table processing
Develop program using data validation techniques
Develop interactive process
Develop menu-driven program
Develop database program
Develop program that utilizes a recursive process
Develop program using copy libraries
Develop program using system calls
Develop program using design tool

Competency: Develop documentation

Competency Builders:

Prepare program documentation
Prepare user documentation
Prepare data-flow diagrams
Update design documentation

Competency: Demonstrate knowledge of the systems design process

Competency Builders:

Identify processing requirements
Identify programming language
Use appropriate reference materials
Describe role of user and management in the development of a computer system
Describe use of data flow diagrams, system flowcharts and display screen layout forms
Conduct interviews
Design system inputs and outputs and processes
Create design documentation
Present system design

Competency: Evaluate system

Competency Builders:

Identify evaluation criteria
Develop test plan
Analyze test data
Present results
Recommend corrective action, if appropriate
Explain iterative nature of system evaluation

Competency: Implement system

Competency Builders:

Identify implementation plan
Identify conversion method
Train personnel
Present implementation plan

Unit: Supervision

Competency: **Manage human resources**

Competency Builders:

Apply appropriate management and leadership styles
Use foresight to anticipate and manage change
Display managerial and supervisory skills
Apply human relations skills
Develop management objectives
Create and/or implement organizational charts
Clarify company policies and procedures
Maintain office procedures manual(s)
Establish office procedures
Prepare and/or monitor budgets
Prepare managerial reports
Analyze production reports
Maintain appropriate work environment
Conduct tours
Monitor progress
Prepare and communicate productivity reports
Provide and/or coordinate training for new policies
Troubleshoot office problems
Communicate performance expectations
Counsel employees about career objectives
Maintain performance records
Adhere to company policies regarding discrimination and harassment
Address employees regarding disciplinary action(s)
Recommend employees for promotion
Explain procedure for handling grievances
Evaluate employee performance
Document personnel issues

Competency: Manage projects

Competency Builders:

Conduct needs analysis
Set priorities
Research information
Develop goals and objectives
Develop strategic plan
Develop project budget
Apply forecasting techniques
Apply prioritizing techniques
Schedule work assignments
Collect data
Analyze data
Act on data
Monitor project progress
Meet project timelines
Monitor budget
Apply quality measures and counter measures

Competency: Manage work flow

Competency Builders:

Plan office layout for workflow
Create organizational charts
Communicate operating policies and procedures
Maintain office procedures manual(s)
Identify production standards
Interface with other departments
Prioritize work
Assign work
Delegate work
Provide instruction
Monitor progress
Complete productivity and/or managerial reports
Complete assigned tasks in a timely manner
Coordinate with team members

Competency: Conduct staff/team meetings

Competency Builders:

Plan meeting
Set agenda
Set and schedule meeting
Schedule meeting room
Invite appropriate personnel
Identify need for outside speakers
Assign someone to take minutes
Make introductions
Invite questions and comments, and group participation
Focus on agenda items, but maintain issues list as they arise
Decide appropriate action, time frame, and accountability to tasks
Monitor time
Close meeting on time
Publish minutes in timely manner to appropriate persons

Competency: Conduct training

Competency Builders:

Secure training resources, materials, and equipment
Assess training needs
Train employees
Evaluate progress
Provide appropriate feedback
Document training participation

Computer Support Technician

NOTE: Each TCP should respond to labor market demands in your area. Therefore, the following pages should be examined before being selected for use in TCP Part I (See "The TCP Process" Tab). For example, some units may not apply to your situation, nor might all the competencies within each unit be appropriate. Also, note that several units appear within each of the twelve occupations in this binder. Those "common" units should only appear once in the draft competency list for TCP Part I if you are compiling several occupations in a cluster format (See "TCP Matrix" Tab).

Units to Consider:	Page
Employability Skills	CS-3
Professionalism	CS-8
Teamwork	CS-12
Professional and Ethical Standards	CS-14
Economic and Business Principles	CS-16
Customer Relations	CS-20
Problem Analysis	CS-21
Project Management	CS-22
Technical Documentation	CS-23
Basic Personal Computer Concepts	CS-24
Packaged PC Applications	CS-26
General Accounting Functions	CS-31
Operating Systems	CS-36
Application Programming and Design	CS-40
Network Operations	CS-45
Computer Hardware Design	CS-50
Microcomputer Electronics	CS-54
Small Business Management	CS-59

DON'T FORGET TO INSERT YOUR ACADEMIC COMPETENCIES HERE

Communications Literacy, Mathematics Literacy, Science Literacy, and Technology Literacy have been removed so that you may insert your own academic lists here.

COMMUNICATIONS LITERACY

(e.g., Reading, Writing, Speaking, and Listening)

MATHEMATICS LITERACY

(e.g., Algebra, Geometry, Trigonometry, Calculus)

SCIENCE LITERACY

(e.g., Physical Science, Environmental Science, Agriscience, Biology, Chemistry, Physics, Anatomy & Physiology)

TECHNOLOGY LITERACY

(i.e., the impact of technology on humans and their home, work, and play environments)

Unit: Employability Skills

Competency: Develop a career plan

Competency Builders:

Identify current interests and aptitudes
Identify common barriers to employment
Describe strategies to overcome employment barriers
Locate resources for finding employment
Research job trends
Identify career options
Identify advantages and disadvantages of career options (in addition to other than monetary)
Identify job requirements
Investigate education/training opportunities
Evaluate personal strengths and weaknesses

Competency: Prepare for employment

Competency Builders:

Identify traditional and non-traditional employment sources
Identify present and future employment opportunities (by geographic location)
Research job opportunities, including non-traditional careers
Compare salary ranges and benefit packages
Compile occupational profile
Identify rights and responsibilities of equal employment opportunity laws
Design resume and cover letter
Target resume
Secure references
Investigate generic and specific employment tests (e.g., civil service exam; drug screening)
Use follow-up techniques to enhance employment potential
Demonstrate legible written communication skills using correct grammar, spelling, punctuation, and concise wording
Describe methods for handling illegal questions on job application forms and during interviews
Write letter of application
Research prospective employer and services performed
Explain critical importance of personal appearance, hygiene, and demeanor
Interpret job description
Demonstrate appropriate interview question and answer techniques
Demonstrate methods for handling difficult interview questions
Evaluate job offers
Write letter of acceptance
Write letter of declination
Demonstrate good listening skills
Ask for the job tactfully
Participate in extracurricular activities (e.g., student government, community projects,)

Competency: Evaluate the importance of self-esteem as an employability skill

Competency Builders:

Identify factors that affect self-esteem
Compare effects of low self-esteem and high self-esteem
Identify strategies to promote positive self-esteem

Competency: Demonstrate job retention skills

Competency Builders:

Identify employer expectations regarding job performance, work habits, attitudes, personal appearance, and hygiene
Exhibit appropriate work habits and attitude
Demonstrate ability to set priorities
Identify behaviors to establish successful working relationships
Identify alternatives for dealing with harassment, bias, and discrimination based on race, color, national origin, sex, religion, handicap, or age
Identify opportunities for advancement
List reasons for termination
List consequences of being absent frequently from job
List consequences of frequently arriving late for work
Demonstrate interpersonal relations skills (i.e., verbal and written)
Demonstrate negotiation skills
Demonstrate teamwork
Follow chain-of-command
Exhibit appropriate job dedication

Competency: Demonstrate knowledge of work ethic

Competency Builders:

Define work ethic
Identify factors that influence work ethic
Differentiate law and ethics
Describe how personal values are reflected in work ethic
Describe how interactions in the workplace affect personal work ethic
Describe how life changes affect personal work ethic

Competency: Exhibit appropriate work ethic

Competency Builders:

Use time-management techniques
Avoid personal activity during work hours
Attend work as scheduled
Adhere to company and/or governmental policies, procedures, rules, and regulations
Exercise confidentiality
Demonstrate appropriate human relations skills
Adhere to rules of conduct
Accept constructive criticism
Offer constructive criticism
Take pride in work
Resolve conflict
Manage stress
Avoid sexual connotations and harassment
Adjust to changes in the workplace
Demonstrate punctuality
Assume responsibility for personal decisions and actions
Take responsibility for assignments
Follow chain-of-command

Competency: Apply decision-making techniques

Competency Builders:

Identify decision to be made
Identify ownership of decision to be made
Identify possible alternatives and their consequences
Make decisions based on facts, legality, ethics, goals, and/or culture
Apply time factor(s)
Present decision to be implemented
Evaluate decision made
Take responsibility for decision

Competency: Apply problem-solving techniques

Competency Builders:

Identify problem
Select appropriate problem solving tools/techniques
Identify root problem cause(s)
Track root problem cause(s)
Identify possible solutions and their consequences (e.g., long term, short term, crisis)
Use resources to explore possible solutions to problem
Contrast advantages and disadvantages of each solution
Identify appropriate action
Evaluate results
Identify post-preventive action

Competency: Exhibit characteristics for job advancement

Competency Builders:

Display positive attitude
Demonstrate knowledge of position
Perform quality work
Adapt to changing situations and technology
Demonstrate capability/responsibility for different positions
Identify characteristics of effective leaders
Identify opportunities for leadership in work place/community
Demonstrate initiative to affect change in workplace
Participate in continuing education/training program
Responds appropriately to criticism from employer, supervisor, or other employees
Exhibit awareness of corporate culture
Prepare for job setbacks
Exhibit continual growth based on performance evaluation
Set realistic goals

Unit: Professionalism

Competency: Project professional image

Competency Builders:

Define professionalism
Exhibit professional appearance
Exhibit professional manners
Project professional attitude
Identify individuals' vital role in organization
Exhibit proper etiquette in professionally-related situations

Competency: Achieve individual and professional goals

Competency Builders:

Set flexible, realistic, and measurable goals
Identify potential barriers to achieving goals
Identify strategies for addressing barriers to goal achievement
Breakdown long-term goals into short-term goals
Prioritize goals
Commit to goals
Adjust goals
Obtain support for goals
Reward goal achievement

Competency: Manage personal finances

Competency Builders:

Explain need for personal management records
Balance checkbook
Identify tax obligations
Analyze how credit affects financial security
Compare types and methods of investments
Compare types and methods of borrowing
Compare types and methods of insurance
Compare types of retirement options/plans
Identify discriminatory vs. non-discriminatory expenditures

Competency: Support community well-being

Competency Builders:

Identify environmental, educational, and social issues
Participate in social and/or community activities

Competency: Achieve organizational goals

Competency Builders:

Evaluate personal goals in relation to organizational goals
Monitor progress by evaluating feedback
List responsibilities in relation to organization goals
Accomplish assigned tasks
Exercise responsibility in relation to organizational goals
Set appropriate personal performance standards
Communicate goals with supervisor and peers
Demonstrate knowledge of products and services
Promote organizational image and mission

Competency: Demonstrate positive relations in the workplace

Competency Builders:

Identify personality types of self and other
Identify various management styles
Support employer expectations
Support employer decisions
Accept constructive criticism
Give constructive feedback
Adapt to changes in workplace
List factors to consider before resigning
Write letter of resignation

Competency: **Manage stressful situations**

Competency Builders:

Accept stress as part of daily life
Identify personal and professional factors contributing to stress
Describe physical and emotional responses to stress
Evaluate positive and negative effects of stress on productivity
Identify strategies for reducing stress
Implement strategies to manage stress
Create strategies for developing and maintaining support systems

Competency: **Analyze effects of family on work and work on family**

Competency Builders:

Identify how family values, goals, and priorities are reflected in work place
Identify responsibilities and rewards associated with paid and non-paid work
Identify responsibilities and rewards associated with families
Explain how family responsibilities can conflict with work
Explain how work can conflict with family responsibilities
Explain how work-related stress can affect families
Explain how family-related stress can affect work
Identify family support systems and resources
Identify work-related support systems and resources
Communicate with family regarding work

Competency: **Apply lifelong learning skills**

Competency Builders:

Define lifelong learning
Identify factors that cause need for lifelong learning
Analyze effects of change
Identify reasons why goals change
Describe importance of flexibility and adaptability
Evaluate need for continuing education/training

Competency: Manage professional development

Competency Builders:

Identify career opportunities
Modify career plan
Participate in continuing education/training opportunities
Document continuing education/training
Read profession-related manuals, technical journals, and periodicals
Attend meetings, workshops, seminars, conferences, and demonstrations
Participate in professional organizations
Build personal/professional mentor relationship
Build personal/professional support system
Build professional network
Strengthen communication skills
Strengthen leadership skills
Strengthen management skills

Unit: Teamwork

Competency: Demonstrate knowledge of teamwork

Competency Builders:

Define empowerment
Differentiate work groups and teams
Identify conditions essential to teamwork (e.g., brainstorming)
Explain influence of culture (e.g., corporate, community) on teamwork
Identify appropriate situations for using teams
Define team structures (e.g., cross functional, quality improvement, task force, quality circles)
Identify team building concepts
Describe characteristics and dynamics of teams
Identify characteristics of effective team leaders and members
Identify responsibilities of a valuable team member
Identify methods of involving each member of a team
Explain how individuals from various backgrounds contribute to work-related situations (e.g., technical training, cultural heritage)
Explain the purpose of facilitators
Define consensus
Define reward/recognition system

Competency: Demonstrate teamwork

Competency Builders:

Identify purpose of team and intended goal (include time frames)
Structure team around purpose
Define responsibilities of team members
Contribute to efficiency and success of team
Work toward individual and team milestones
Analyze results of team project
Facilitate a team meeting
Assist team member(s) with problem
Monitor time frame
Stress continuous improvement
Accept failure as part of learning

Competency: Use teamwork to solve problems

Competency Builders:

Identify appropriate situations for using teams
Use problem-solving process in a team setting
Identify quality management processes/techniques
Identify quality assurance processes/techniques
Prepare presentation

Competency: Conduct team meetings

Competency Builders:

Plan agenda
Schedule meeting and location
Invite appropriate personnel
Solicit outside speakers as needed
Assign someone to take minutes
Facilitate introductions
Invite questions and comments and group participation
Focus team on agenda items
Assign appropriate action, time frame and accountability to tasks
Monitor time
Close meeting on time
Publish minutes in timely manner
Set ground rules
Avoid placing individual agendas above the group's agenda

Unit: Professional and Ethical Standards

Competency: Explain professional responsibilities

Competency Builders:

Explain the need for professional and ethical standards
Explain responsibility of the individual to apply ethical standards
Identify responsibility to client(s) or employer(s)
Explain employer's consequences of unprofessional and/or unethical employee behavior
Identify responsibility to self (e.g., professional appearance and limitations) and to profession
Explain importance of conflict resolution in the workplace

Competency: Describe self-managed employees

Competency Builders:

Explain the need for organizing tasks
Explain management-by-objectives
Explain importance of planning, both long-term and short-term
Explain importance of evaluating progress
Explain importance of reporting progress
Explain time management
Explain the benefit of creative brainstorming and innovative thinking

Competency: Describe intellectual property

Competency Builders:

Explain legal ownership of proprietary assets produced by the computing professional
Explain public policy
Explain rights of the originator
Explain rights of the public
Explain patent
Explain copyright
Explain licenses
Explain confidentiality

Competency: **Apply professional and ethical standards**

Competency Builders:

Identify computing industry's standards
Describe computing industry's code of ethics
Explain various ethics established by computing societies
Apply various ethics established by computing societies

Unit: Economic and Business Principles

Competency: Describe basic economic concepts

Competency Builders:

Identify importance of economic resources
Explain concept of economic resources
Explain importance of economic resources
Explain concept of economic goods and services
Differentiate between economic goods and services
Differentiate between needs and wants
Explain concept of supply and demand
Explain concept of price
Explain how supply, demand, and price are related
Explain concept of private enterprise and business ownership
Explain concept of profit
Explain concept of risk
Explain concept of competition
Explain relationship among risk, competition, and profit

Competency: Conduct training

Competency Builders:

Secure training resources, materials, and equipment
Assess training needs
Train employees
Evaluate progress
Provide appropriate feedback

Competency: Evaluate economic systems

Competency Builders:

Compare types of economic systems
Research free enterprise system
Interpret relationship between government and business
Interpret relationship between labor and management

Competency: Illustrate basic economic principles

Competency Builders:

Illustrate global economic and world market applications
Illustrate economic cycles (e.g., unemployment, recession, inflation, budget deficits)
Illustrate economic activity's affect on business (e.g., financial, competitor indicators, industry)

Competency: Analyze cost and profit influences

Competency Builders:

Identify importance of maximizing quality
Identify importance of maximizing productivity
Contrast specialized training and cross training
Contrast labor and management
Contrast government and business

Competency: Illustrate economic indicators and trends

Competency Builders:

Define gross national product and gross domestic product
Interpret impact of interest rates
Interpret impact of government spending
Interpret impact of seasonal business cycles
Interpret impact of inflation, growth, recession, and unemployment
Interpret impact of national and world events
Interpret impact of the growth of international trade

Competency: Explain basic international trade concepts

Competency Builders:

Explain nature and importance of international trade
Contrast advantages and disadvantages of marketing in international trade
Explain balance of trade concepts
Describe impact of foreign investment

Competency: Explain basic business concepts

Competency Builders:

Identify functions of business
Explain role of management
Explain role of labor
Explain concept of service as a product
Explain role of administration
Explain role of operations
Identify role of company objectives
Identify importance of ethical business practices
Identify types of ownership
Identify components of a business plan

Competency: Summarize business principles

Competency Builders:

Explain business organizations and functions
Describe business reporting and information flow
Map interface of departmental functions
Identify communication channels (e.g., formal, informal)
Explain total quality management (TQM) principles

Competency: Illustrate legal concepts

Competency Builders:

Define legal terminology
Explain business law concepts
Interpret contracts and/or legal documents
Explain relationship of laws and regulations to company contracts, policies, and procedures
Explain laws relating to working conditions, wages and hours, civil rights, social security, disability, and unemployment insurance

Competency: Explain role of marketing

Competency Builders:

Explain aspects of sound business image
Identify purposes of marketing
Identify functions of marketing
Describe effects of marketing
Explain product/service variety
Identify target markets
Define sales potential
Explain pricing strategies
Differentiate advertising campaigns
Explain advantages and disadvantages of advertising agencies
Describe sales incentive programs
Maintain marketing feedback and make appropriate changes
Identify types of marketing strategies and the advantage and disadvantage of each (e.g. phone, mail, person)
Design monitor plan

Competency: Serve customers/clients

Competency Builders:

Identify importance of customer
Identify customer services to provide
Relate to customers in timely fashion
Identify customer needs and wants
Gather complete and accurate information
Apply customer service concepts and terminology
Identify methods for addressing dissatisfied customers

Unit: Customer Relations

Competency: Demonstrate positive relations with customers

Competency Builders:

Identify importance of customers to business
Differentiate between customer needs and wants
Provide prompt and courteous service
Resolve customer inquiries and complaints and/or refer customer to appropriate person
Identify methods of addressing dissatisfied customers

Competency: Perform scheduling functions to meet customers needs

Competency Builders:

Create calendar/schedule
Maintain appointment calendars
Process requests for appointments
Verify appointments
Notify customer of changes in schedule
Manage scheduling conflicts

Unit: Problem Analysis

Competency: Appraise situations

Competency Builders:

Identify concerns
Classify concerns
Set priorities
Identify resolution process
Plan resolution

Competency: Analyze potential problems

Competency Builders:

Identify potential problems
Identify likely causes
Identify preventive actions
Identify contingent actions

Competency: Analyze actual problems

Competency Builders:

Identify deviation
Identify problem and possible causes
Test for probable causes
Verify cause

Competency: Analyze decisions

Competency Builders:

Identify objective(s)
Classify objective(s)
Identify alternatives
Evaluate alternatives
Assess risks
Make final choice

Unit: Project Management

Competency: Explain project management

Competency Builders:

Identify project purpose/goal
Identify project objectives
Identify work breakdown structure (WBS)
Identify resource requirements

Competency: Plan projects

Competency Builders:

Apply responsibility assignment matrix (RAM)
Apply Gantt or bar charts
Apply network diagrams
Apply critical path method (CPM)
Apply project education and review techniques
Apply software programs

Competency: Implement projects

Competency Builders:

Monitor project
Control project
Modify project

Competency: Evaluate projects

Competency Builders:

Analyze performance
Close-out project evaluation
Draw project management conclusions

Unit: Technical Documentation

Competency: Demonstrate proficiency in technical documentation

Competency Builders:

Identify parameters
Ask questions
Interpret specifications or drawings
Record process (e.g., flowchart, step-by-step)
Record data
Maintain test logs
Compile cumulative reference/record

Competency: Demonstrate proficiency in technical report writing

Competency Builders:

Use data books and cross reference/technical manuals
Identify type of report needed
Compile relevant data
Design applicable charts and graphs
Analyze data
Draw conclusions
Outline reports
Write reports
Present reports

Unit: Basic Personal Computer Concepts

Competency: Explain use of personal computers in business

Competency Builders:

Describe the impact of computer use on individuals and businesses
Identify basic applications of computers in business
Identify automated business systems and electronic media
Identify different types and sizes of computers
Define input, processor, output, and storage units
Identify how PCs integrate with other information technologies (e.g., scanners, mainframes)
Describe impact of computer use on individuals and business
Identify basic applications of computers in business

Competency: Describe personal computer operations

Competency Builders:

Explain how data is stored in main computer memory
Explain how a computer system executes program instruction
Explain electronic storage capacity
Explain electronic units of measure and how they represent data
Identify data storage techniques
Identify types of memory
Explain different types of input and output

Competency: Explain information processing

Competency Builders:

Define operating systems
Describe the difference between data files and program files
Demonstrate knowledge of system commands
Define software types and functions
Describe basic disk operation and care
List business applications of software package
List advantages and disadvantages of integrated and dedicated software

Competency: **Demonstrate computer literacy**

Competency Builders:

Identify computer components
Identify parallel versus serial ports
Explain differences between conventional, expanded, and extended memory
Identify use of storage media
List commands that affect disk operation
Use disk operating system to format disks
Originate directories and subdirectories
Explain common configuration variables
Explain device driver concepts
Demonstrate commands that open, close, copy, delete, and rename files on disk
Keyboard document(s) using computer

Unit: Packaged PC Applications

Competency: Explain software applications

Competency Builders:

Describe need for application software
Describe different types of software applications
Explain advantages and disadvantages of various software applications
List software sources
Explain copyright laws for software

Competency: Explain spreadsheet packages

Competency Builders:

Define spreadsheet
Demonstrate knowledge of basic spreadsheet terminology
Define components of spreadsheets
Describe implementation of spreadsheet operations in business scope

Competency: Perform word processing functions

Competency Builders:

Define word processing terminology
Explain functions of word processing software
Explain word processing applications
Use appropriate reference materials
Keyboard efficiently by touch
Use mouse
Initialize diskette
Prepare backup file
Maintain backup file
Update spelling dictionary and spell check
Perform document functions (e.g., locate, rename, delete, save, retrieve, copy)
Perform formatting functions (e.g., set margins and tabs, center, underline, bold, cut and paste)
Use edit features
Use sort features
Add page numbers to document
Add headers and footers
Print files, pages, screens and blocks of text
Verify accuracy of output
Create a document
Save a document to disk
Retrieve a document from disk
Edit an existing document
Describe word-wrap
Print a document
Create glossary file
Store boilerplate material
Compose documents at keyboard
Tabulate multiple columns
Prepare new documents from existing ones
Merge selected copy with new information
Prepare various types of table options
Index text
Format text
Integrate database, spreadsheet and graphic files
Convert documents from one system to another
Demonstrate use of computer thesaurus
Use multimedia techniques/resources

Competency: Use spreadsheet packages

Competency Builders:

Use spell check
Execute an electronic spreadsheet
Enter data, formulas, and functions
Differentiate between labels and numbers
Compare absolute and relative addressing
Speculate using "what if..." questions
Sequence keystrokes in the creation of a macro
Create database within spreadsheet and perform data query functions
Move around in spreadsheet and correct errors
Format spreadsheet
Create graphs
Print graphs
Save previously saved files
Load previously saved files
Replicate cells using copy commands
Use electronic spreadsheet to complete business application
Use spreadsheet to plan financial strategies
Prepare spreadsheet
Use multimedia techniques/resources

Competency: Explain database packages

Competency Builders:

Define database
Explain terms used in database systems
Describe common functions of database systems

Competency: Use database packages

Competency Builders:

Use database package to create, input, edit, and display fields and records
Analyze structure of database files
Perform calculations with a database file
Alter structure of database file
Sort records based on multiple fields
Identify advanced database technology
Use appropriate reference materials
Create relational database
Enter elements into database
Proofread database
Edit database
Design report formats
Apply database management system (DBMS) commands
Print reports using data from multiple databases
Use database files with other application software
Verify accuracy of output (e.g., edit reports)
Use multimedia techniques/resources

Competency: Explain function of shared environments

Competency Builders:

List purposes of a network environment
Define electronic mail
Identify advantages and disadvantages of electronic mail
Describe impact of local and wide area networks on mail delivery

Competency: Use a shared environment

Competency Builders:

Compose electronic messages
Send electronic messages using appropriate format
List categories of electronic mail service
Transmit document using electronic mail system
Monitor electronic mail

Competency: **Manage software packages**

Competency Builders:

Install software packages
Upgrade software packages
Document installation of software packages
Convert data files

Competency: **Perform computer business graphics**

Competency Builders:

Define purpose and types of graphics
Use appropriate reference materials
Create graphics
Proofread graphics
Edit graphics
Save graphics
Retrieve graphics
Print graphics to various output devices
Verify accuracy of output
Use graphic functions to create files, input data, process data, and produce output
Use graphics files with other application software

Competency: **Use graphic user interface (GUI) techniques**

Competency Builders:

Explain multi tasking environment
Setup data exchange between two different applications
Setup an object link between two different applications
Explain the use of dynamic link libraries

Unit: General Accounting Functions

Competency: Apply arithmetical accounting skills

Competency Builders:

Compute cash discounts for various terms
Compute trade discounts
Compute extension, sales tax, and totals of sales slips
Compute markups and markdowns
Calculate rates of trade and cash discounts
Calculate unit prices given quantity prices
Calculate costs of portions of units
Solve problems involving fractions, decimals, and percentages
Solve commission problems
Solve finance-charge problems
Solve annual percentage rate problems

Competency: Apply accounting principles

Competency Builders:

Define accounting terminology
Define journals and ledgers
Identify basic accounting principles
Identify basic accounting applications
Identify computer accounting applications
Identify financial control procedures
Explain increases and decreases in accounts
Explain periodic reporting procedures
Prepare income statement
Prepare balance sheet columns
Prepare cash flow statement
Interpret balance sheets
Interpret income statements
Interpret cash-flow analysis statements

Competency: Perform manual accounting functions

Competency Builders:

Explain use of record keeping in relation to business and economic applications
Use appropriate reference materials
Analyze transactions
Use "T" accounts to label increases, decreases, and balances
Record transactions
Process receivables
Monitor expense accounts
Process payables
Prepare budgets
Process purchases
Prepare comparative (actual vs. budget) income statement

Competency: Perform automated accounting functions

Competency Builders:

Use appropriate reference materials
Operate equipment
Key data on numeric keyboard
Import or download data from computer records
Scan data from various media
Use integrated software package for simulation of accounting cycle
Set up chart of accounts for general ledger
Set up accounts payable and accounts receivable ledgers
Add accounts to general and subsidiary ledgers
Input account balances
Enter journal transactions
Process journal transaction
Prepare trial balance
Verify data and correct errors
Generate reports
Proofread accounting records and statements
Edit accounting records and statements
Save accounting records and statements
Retrieve accounting records and statements
Print accounting records and statements

Competency: Perform spreadsheet functions

Competency Builders:

Explain computer spreadsheet analysis
Use appropriate reference materials
Operate equipment
Create or format spreadsheet
Enter formulas
Move cells and ranges
Enter data on spreadsheet
Import or download data to spreadsheet
Apply data sort, data query, data fill, and data distribution
Export spreadsheet files to word processing, graphics and database files
Import spreadsheet files to word processing, graphics and database files
Proofread spreadsheet data
Edit spreadsheet data
Verify accuracy of output
Save spreadsheet
Retrieve spreadsheet
Print spreadsheet
Use spreadsheet functions to create files, input data, process data, and produce output
Use spreadsheet files with other application software

Competency: Perform payroll functions

Competency Builders:

Use appropriate reference materials
Collect payroll data
Process payroll
Comply with company policies and procedures
Comply with government and legal requirements
Maintain records and forms
Monitor personnel costs

Competency: Perform banking functions

Competency Builders:

Use appropriate reference materials
Prepare checks, deposit slips, and withdrawal slips
Maintain checkbook
Balance checkbook
Maintain petty cash
Balance petty cash
Explain automated banking transactions
Prepare banking records
Maintain banking records

Competency: Process cost accounting information

Competency Builders:

Define cost accounting, direct materials, direct labor and overhead
Define cost allocation methods
Identify source documents
Compute direct materials by job or process
Compute direct labor by job or process
Compute overhead rates to apply to jobs or processes
Compute cost of goods produced
Compute cost of goods sold
Journalize cost of goods produced and sold entries
Post cost of goods produced and sold entries
Compute cost of inventories
Prepare cost production reports
Prepare related records of job or process costs

Competency: Process end-of-fiscal-period information

Competency Builders:

Prepare worksheet
Prepare trial balance
Foot ledger accounts and compute balances
Prove equality of debits and credits
Locate errors
Record adjustments
Make appropriate extensions
Journalize basic adjusting, closing, and reversing entries
Post basic adjusting, closing, and reversing entries
Prepare basic income statement
Prepare basic balance sheet
Prepare basic cash flow statement

Unit: Operating Systems

Competency: Describe operating systems

Competency Builders:

Describe microcomputer operating systems
Describe minicomputer operating systems
Describe mainframe operating systems
Describe network operating systems
Describe how commands handle tasks in operating systems
Describe various input/output systems
Describe the purpose of operating system utilities
Differentiate between a compiler and an interpreter
Describe the processing that occurs when an interpreter is used
Describe the processing that occurs when a compiler is used

Competency: Explain central processing unit (CPU) control

Competency Builders:

Explain CPU processes
Explain CPU concurrency
Explain CPU scheduling
Explain CPU multitasking
Explain CPU multiprocessing

Competency: Describe memory management

Competency Builders:

Describe functions of primary memory
Describe functions of virtual memory (e.g., paging, segmentation)
Describe functions of extended memory
Describe functions of expanded memory
Describe functions of cache memory

Competency: Explain auxiliary storage management

Competency Builders:

Explain storage management software
Identify auxiliary storage media
Describe operational characteristics of storage media
Describe storage capacities of storage media
Describe retrieval methods of storage media
Differentiate between files and directories
Differentiate among management devices (e.g., disk, tape, CD-ROM)
Explain redundant array of inexpensive disks (RAID)
Explain mirroring concepts

Competency: Store media

Competency Builders:

Identify need for data library
Use appropriate reference materials
Retrieve stored media
File stored media
Initialize media
Catalog media
Maintain supplies
Maintain media library
Maintain backup records
Maintain company and/or government standards for media security
Maintain archives of company records required by policy or law

Competency: Explain security issues

Competency Builders:

Define backup and recovery
Explain disaster planing
Define authentication (e.g., passwords, access level)
Describe encryption techniques
Describe viruses and worms
Describe vaccines
Explain operating system penetration

Competency: Maintain security requirements

Competency Builders:

Implement security procedures
Apply business ethics
Follow security rules, regulations, and codes
Document security procedures
Perform security checks

Competency: Define open system concepts

Competency Builders:

Differentiate between proprietary and open system architecture
Explain X/OPEN
Explain purpose of Open Software Foundation
Explain purpose of UNIX International
Explain purpose of Corporation for Open Systems International
Identify the OSI Model

Competency: Operate system

Competency Builders:

Review automated scheduling software
Define job, batch, and job step
Describe data requirements
Use appropriate reference materials
Perform power-up and log-on procedures
Demonstrate basic programming skills
Use console device to interact with and respond to system messages
Secure supplies and resources
Follow processing procedures for each application/job
Run application/job
Describe scheduling priority
Describe transmittal form and transmittal log
Develop an audit trail
Handle materials and equipment in a responsible manner

Competency: Maintain system

Competency Builders:

Use appropriate reference materials
Monitor system status and performance
Run diagnostics
Respond to system messages
Report computer system malfunction(s)
Report software malfunction(s)
Fix recoverable problems
Maintain security
Maintain computer log
Perform backup procedure(s)
Perform preventative maintenance procedures
Change hardware
Install software packages
Restore system
Follow log-off and power-down procedure(s)

Competency: Administer system

Competency Builders:

Manage complete system
Manage network
Manage operating system
Manage applications

Unit: Application Programming and Design

Competency: Explain computer applications

Competency Builders:

Explain hardware component functions
Explain uses of a computer
Describe major events in the development of computers
Describe major types of software and their functions
Read computer publications
Interpret computer trends
Describe batch processing
Describe interactive processing
Describe ad hoc reporting

Competency: Develop computer applications

Competency Builders:

Use appropriate reference materials
Analyze specifications
Divide design specifications into logical blocks (e.g. flowchart, data flow diagram, system flows record and layout)
Identify constraints
Identify programming language
Identify input and output (I/O) requirements
Prepare logic using program-flow diagram

Competency: Explain programming theory

Competency Builders:

Explain the meaning of “reserved word”
Describe arrays and tables
Explain compilers
Differentiate between system documentation and user documentation
Describe what is meant by top-down design and structured programming
Identify the steps in the program development cycle
Design a decision table for a specified problem
Identify the steps and procedures required to develop test data
Explain the difference between recursion and iteration
Describe what is meant by data validation
Describe what is meant by "object oriented" programming

Competency: Apply programming theory

Competency Builders:

Demonstrate use of working storage variables
Write source code per standards
Use spacing charts to plan program output
Code a modular program
Interpret a simple hierarchy chart
Interpret a simple pseudocode design
Create a flow-chart
Perform program sorts
Demonstrate use of loops
Demonstrate use of logical operators (e.g., AND, OR, NOT)
Code error-handling techniques
Demonstrate use of data files

Competency: Explain programming languages

Competency Builders:

Outline history of programming languages
Identify primary use of programming languages and their weaknesses
List rules for naming variables

Competency: Use programming language

Competency Builders:

Perform character manipulation
Declare variables
Initialize variables
Modify variables
Demonstrate a function
Demonstrate a library
Demonstrate a subroutine
Demonstrate system calls
Apply conditional statements
Evaluate series of logical expressions
Code separate addition, subtraction, multiplication, and division statements
Declare a one-dimensional array
Initialize an array
Generate executable code

Competency: Use operating system

Competency Builders:

Apply appropriate text editor
Apply operating system commands
Apply operating system utilities

Competency: Test programs

Competency Builders:

Explain debugging statements
Perform debugging functions
Debug compilation errors
Create test data that checks logic and error routines
Execute program with test data
Correct execution errors
Perform unit and integration test
Analyze test results
Define auto testing software

Competency: Apply programming skills

Competency Builders:

Demonstrate knowledge of file and table processing
Develop program using data validation techniques
Develop interactive process
Develop menu-driven program
Develop database program
Develop program that utilizes a recursive process
Develop program using copy libraries
Develop program using system calls
Develop program using design tool

Competency: Develop documentation

Competency Builders:

Prepare program documentation
Prepare user documentation
Prepare data-flow diagrams
Update design documentation

Competency: Demonstrate knowledge of the systems design process

Competency Builders:

Identify processing requirements
Identify programming language
Use appropriate reference materials
Describe role of user and management in the development of a computer system
Describe use of data flow diagrams, system flowcharts and display screen layout forms
Conduct interviews
Design system inputs and outputs and processes
Create design documentation
Present system design

Competency: Evaluate system

Competency Builders:

Identify evaluation criteria
Develop test plan
Analyze test data
Present results
Recommend corrective action, if appropriate
Explain iterative nature of system evaluation

Competency: Implement system

Competency Builders:

Identify implementation plan
Identify conversion method
Train personnel
Present implementation plan

Unit: Network Operations

Competency: Explain communication standards

Competency Builders:

Identify the seven layers of the International Organization Standard's Open System Interconnection (OSI) Model
Describe each OSI layer, including their interconnectivity
Identify software standards for subnet, presentation layers, and file servers

Competency: Describe network structures

Competency Builders:

Differentiate topologies (e.g., hierarchical, ring, star)
Differentiate architecture(s)
Explain layering
Describe protocols (e.g., TCP/IP, IPX/SPX, etc..)
Describe frame types (e.g., SNA<802.3, 802.5)
Define local area network
Define different types of LANs
Differentiate between network operating systems and data distribution systems
Identify advantages and disadvantages of various LAN operating systems
List duties of LAN supervisor

Competency: Explain network transmission and media

Competency Builders:

Explain signals
Explain patterns
Explain error detection and correction
Explain speed of transmission
Explain use of media
Explain use of equipment
Explain role of network manager

Competency: **Explain network connectivity and interoperability**

Competency Builders:

Identify equipment connecting devices
Differentiate between sync and async devices
Identify software connecting devices
Identify media connecting devices
Identify type of interoperability (e.g., peer-to-peer, peer-to-host)
Identify problems of mixed vendor network implementation
Describe internetworking solutions
Describe cabling schemes and alternatives
Identify network topologies
List pros and cons of network interface cards
List pros and cons of network servers
Explain why internetting is useful or necessary
Describe levels at which internetting can occur
Identify protocols used for remote interconnecting and when each should be used
List common pitfalls when networking computers
Identify method used to evaluate emulators
Describe gateways (e.g., mainframe, protocol)

Competency: **Describe network operating systems**

Competency Builders:

Identify responsibilities of a network operating system
Explain installation procedure for network operating systems
Explain commands needed to use network operating systems
List characteristics of a network interface card (NIC)
Define criteria used to describe network servers
Define criteria used to evaluate network operating systems

Competency: **Describe potential networking problems with applications software**

Competency Builders:

Describe potential hard disk compatibility problems
Differentiate between site multi user and single user licenses
Describe necessary precautions included in programs used on networks

Competency: Explain network management

Competency Builders:

List steps in mapping a network
Explain why files must be organized according to owners, users, and privileges
Describe common standards for setting up and naming files
List criteria used to determine if a file should be network accessible
Identify methods to increase performance
Define hierarchical directory
Explain methods used to determine how many servers should be used
State reasons for channel and cable bottlenecks

Competency: Explain network security

Competency Builders:

Explain need for data protection
Identify common backup devices
Explain criteria for selecting a tape system
Differentiate between hard and soft errors
Contrast streaming and file-by-file backup systems
Explain process for archiving files
Explain necessity for network security
Identify levels of network sedulity and reasons for their existence

Competency: Explain installation procedures

Competency Builders:

Explain why an installation log is necessary
Identify methods of distributing cable, including modeling examples
Identify problems associated with cable installation
Describe types of cable, cable connectors, and grounding techniques
Explain cable testing and tolerance levels
Identify sources of interference and include methods to overcome each

Competency: Use network knowledge

Competency Builders:

Use electronic/voice/multi-media mail
Share files
Use dial-in access
Make backups
Share resources
Explain software control
Apply security and authentication

Competency: Apply network operations

Competency Builders:

Assess user needs to determine which LAN operating systems to use
Demonstrate applications used on LANs
Describe how the network protocols work together
Operate the system in a multi-user environment
Demonstrate knowledge of various networks and compatibility
Differentiate among various topologies
Identify which network operating system to use
Build synchronous transmission circuit using a modem
Build synchronous transmission circuit using a modem
Connect PCs to form a network
Connect two PCs networks
Perform file to file copy in a PC network
Implement print queue in a PC network
Configure file server in a PC network
Connect PC to mini or mainframe
Link mixed vendors (e.g., PC to Mac)
Interconnect via backbone network
Build small ethernet or token ring network

Competency: Administer network

Competency Builders:

Use appropriate reference materials
Apply current LAN concepts and technology
Attach computers and peripherals to LAN
Change computer hardware
Set up system configuration
Install LAN manager software
Install software packages
Respond to system messages
Troubleshoot system
Run software applications
Back up and restore systems
Perform system analysis
Use security procedures
Perform preventative maintenance
Select access control and security
Outline resource management
Install cabling
Install network
Analyze network operations
Check physical and virtual connections
Modify network
Apply standards
Acquire licensing
Plan disaster recovery
Address protocols (e. g., ethernet, token ring, Arcnet)
Monitor network activity/performance

Competency: Perform network maintenance and diagnostics

Competency Builders:

Execute network diagnostics program for software
Execute network diagnostics program for hardware
Apply standard and protocols
Document action(s) taken

Unit: Computer Hardware Design

Competency: Explain standards

Competency Builders:

Identify OSI, IEEE, ISO, and CCITT standards
Identify standard setting bodies and their proclamations
Explain conformance and APIs

Competency: Describe computational site environment

Competency Builders:

Identify environmental requirements
Identify power requirements and power supplies
Identify ergonomic issues
Identify structural capacities
Identify local codes

Competency: Differentiate among architecture and processor types

Competency Builders:

Describe architecture and processors of microcomputers
Describe architecture and processors of minicomputers
Describe architecture and processors of mainframes
Explain instruction sets

Competency: Analyze computer systems architecture

Competency Builders:

Describe the principles and operation of addresses and interrupts
Describe the principles and operation of volatile and non-volatile memory
Describe the principles and operation of advanced memory techniques
Define individual system blocks
Draw systems configuration in block detail
Interpret computer acronyms
Describe priorities and interrupts at systems level
Identify direct memory access data handling system(s)
Define functions of advanced memory techniques (e.g., virtual, pipeline, cache)
Describe how commands handle tasks in operating systems
Describe various input/output systems
Describe the purpose of operating system utilities
Differentiate between a compiler and an interpreter
Describe the processing that occurs when an interpreter is used
Describe the processing that occurs when a compiler is used

Competency: Describe operation of chips and boards

Competency Builders:

Describe chip configuration and structure
Describe operation of memory boards, including chip sizes
Describe operation of mother boards
Describe operation of compressor boards (e.g., math, graphics, FAX, modems, voice)
Describe operation of controller cards
Describe operation of network interface cards
Describe operation of PCMCIA

Competency: Describe operation of connectivity devices

Competency Builders:

Describe operation of baluns
Describe operation of multiplexers, MODEMS, CODECS, DSU
Describe operation of switches, gateways, bridges, routers, brouters, and repeaters
Describe operation of test equipment (e.g., protocol analyzers)

Competency: Explain operation of microprocessor systems

Competency Builders:

Describe essential components of microprocessor and their functions
Describe principles and operation of BUS concepts (e.g., VESA, EISA)
Describe principles and operation of types of memory circuits
Identify operating systems (e.g., DOS, OS/2, UNIX) and their attributes
Describe microprocessor instructions sets
Describe principles and operation of microprocessor machine code
Demonstrate use of microprocessor machine code
Decode microprocessor machine code
Identify types of input and output devices and peripherals
Describe principles and operation of storage devices
Interface input and output ports to peripherals
Identify central processing unit building blocks and their uses
Identify levels of computer languages

Competency: Troubleshoot a microcomputer system

Competency Builders:

Draw system configuration in block detail
Identify priorities and interrupts at system level
Operate computer system architecture
Repair computer system architecture
Demonstrate use of volatile and non-volatile memory
Repair or replace volatile and non-volatile memory

Competency: Install computer system (i.e., monitor, keyboard, disk drive, and printer)

Competency Builders:

Configure system
Verify system
Print copy of root directory to printer
Document system installation

Competency: Explain operation of peripheral equipment

Competency Builders:

Identify types of card and paper-tape equipment and interface controllers
Define printer types and interface controllers
Explain the operation of typical magnetic tape equipment and interface controllers
Describe disk equipment and interface controllers
Define environmental requirements for peripherals and media

Competency: Repair peripheral equipment

Competency Builders:

Troubleshoot and repair disk equipment and interface controllers
Troubleshoot and repair display terminals and interface controllers, including touch screens
Troubleshoot and repair printers and interface controllers, including laser printers
Troubleshoot and repair mouse
Troubleshoot and repair bar code scanner
Troubleshoot and repair CD-ROM

Competency: Explain communication interfacing

Competency Builders:

Identify EIA, IEEE and CCITT standards
Differentiate sync and async devices
Define networking levels or layers
Define protocols
Define packet switching
Define multi-user systems

Unit: Microcomputer Electronics

Competency: Demonstrate proficiency in microprocessors

Competency Builders:

Describe essential components of microprocessor and their functions using a block diagram
Describe principles and operation of types of memory circuits
Describe microprocessor instructions set
Decode microprocessor machine code
Identify types of input and output devices and peripherals
Describe principles and operation of storage devices
Operate oscilloscopes and logic/data analyzers
Demonstrate ability to interface peripherals
Identify central processing units

Competency: Demonstrate proficiency in electronic blueprint reading

Competency Builders:

Interpret basic electronic/electronic standards and symbols
Interpret schematic drawing
Interpret cable drawings
Interpret component drawings
Interpret logic diagrams
Interpret connection drawings
Interpret interconnection drawings
Interpret printed circuit board drawings
Interpret harness drawings
Interpret package drawings
Interpret mechanical/electronic production blueprints and assembly drawings

Competency: **Demonstrate proficiency in direct current (DC) circuits**

Competency Builders:

Define voltage, current, resistance, Ohm's Law, power and energy
Solve problems in electrical units utilizing metric prefixes
Solve algebraic problems to include exponential equations
Measure properties of a circuit using volt-ohm meter (VOM) and digital
 volt-ohm meter (DVM)
Analyze series circuits using KVL
Analyze parallel circuits using KCL
Analyze series-parallel and bridge circuits
Describe voltage divider circuits (loaded and unloaded)
Analyze DC circuits that demonstrate the maximum power transfer theory
Apply Ohm's law
Apply Watt's law
Apply Kirchoff's current and voltage laws
Interpret color codes and symbols to identify electrical components and values
Measure properties of a circuit using analog and digital meters
Measure conductance and resistance of conductors and insulators
Describe magnetic properties of circuits and devices
Describe the physical and electrical characteristics of capacitors and inductors
Demonstrate troubleshooting techniques for DC circuits

Competency: **Demonstrate proficiency in alternating current (AC) circuits**

Competency Builders:

Analyze properties of an AC signal
Analyze AC signals utilizing VOM, DVM, oscilloscope, frequency counter and function generator
Analyze power in AC circuits
Set up capacitor and inductor analyzers for AC circuits
Use meter to measure value of capacitors and inductors
Identify AC sources
Describe the characteristics of sinusoidal and non-sinusoidal wave forms
Describe the principles and characteristics of capacitative circuits
Demonstrate the operation inductive circuits
Describe the principles and characteristics of transformers
Demonstrate the operation of AC circuits utilizing transformers
Analyze differentiators and integrators to determine RC and RL time constants
Describe characteristics of RLC circuits (series, parallel, and complex)
Describe the characteristics of series and parallel resonant circuits
Analyze series and parallel resonant circuits
Describe the principles and characteristics of frequency selective filter circuits
Demonstrate the operation of frequency selective filter circuits
Describe isolation transformers and surge suppressers
Demonstrate troubleshooting techniques for AC circuits

Competency: **Demonstrate proficiency in discrete solid-state devices**

Competency Builder:

Describe properties of semiconductor materials
Describe operating characteristics and applications of PN junctions
Demonstrate operation of diode circuits
Troubleshoot and repair diode circuits
Describe operating characteristic and applications of bipolar transistors
Describe operating characteristics and applications of field effect transistors
Describe operating characteristics and applications of special diodes/transistors
Describe operating characteristics and applications of opt-electronic devices
Describe operating characteristics and applications of single-stage amplifiers
Repair and troubleshoot single-stage amplifiers
Demonstrate the operation of thyristor circuitry (e.g., SCR, TRIAC, DIAC)
Troubleshoot and repair thyristor circuitry
Operate analog and digital test equipment for testing solid-state devices
Demonstrate use of an oscilloscope for solid-state circuits
Demonstrate use of function generator for solid-state circuits
Demonstrate use of transistor testers
Describe the operating characteristics and applications of regulated and switching power supply circuits
Demonstrate the operation of regulated power supply circuits
Troubleshoot and repair regulated and switching power supply circuits

Competency: Demonstrate proficiency in digital circuits

Competency Builders:

Describe characteristics of integrated circuit logic families
Describe the principle operation of logic gates
Describe various types of numbering systems
Demonstrate the use of logic gates
Describe the principles and operation of combinational logic circuits
Troubleshoot combinational logic circuits
Describe various types of flip-flops
Demonstrate use of flip-flops
Describe various clock and timing circuits
Demonstrate use of clock and timing circuits
Describe various types of encoders and decoders
Demonstrate use of various types of encoders and decoders
Describe various type so multifplexer and demultiplexer circuits
Demonstrate use of multifplexer and demultiplexer circuits
Describe the principles and operation of digital-to-analog analog-to-digital circuits
Operate a logic probe and pulsers for digital circuits
Troubleshoot and repair digital circuits

Competency: Apply troubleshooting techniques to a microcomputer system

Competency Builders:

Isolate faults in systems boards
Isolate faults in memory circuits
Isolate faults in data storage devices
Isolate faults in power supplies
Debug microprocessor machine code
Troubleshoot I/O ports
Isolate faults in I/O interface circuitry
Troubleshoot a microcomputer system
Use diagnostic software
Troubleshoot peripheral devices such as printer, modem, monitor, keyboard, disk drive, hard drive, mouse, tape back-up
Maintain troubleshooting and repair records
Interpret prints (e.g., PID, loopsheets)

Unit: Small Business Management

Competency: Explain entrepreneurship

Competency Builders:

Identify characteristics of entrepreneurs
Identify qualities and skills needed by business owners
Identify means of obtaining technical assistance
Identify advantages and disadvantages of owning a small business
Identify personal risks of owning a small business
Describe basic factors contributing to business success
Describe a franchise-dealer relationship

Competency: Evaluate entrepreneurship as a personal goal

Competency Builders:

Evaluate personal interests and resources (e.g., time, energy, skills)
Compare personal interests and skills with those necessary for entrepreneurship
Assess aptitude to become a successful entrepreneur
Identify motives for becoming an entrepreneur

Competency: Develop a business plan

Competency Builders:

List sources of information for starting a business
Classify local and state requirements for starting business
Identify risks of creating a new business
Differentiate among market characteristics
Analyze financing of business ownership
Develop marketing strategies

Competency: Identify role of small business in the economy

Competency Builders:

Identify factors that contribute to the success and failure of small business
Describe effects of supply, demand, profit, and competition on small business
Explain relationship of small business to a national (USA) and global economy

Competency: Analyze how legislation affects small business

Competency Builders:

Identify legal issues faced by entrepreneurs
Describe the relationship between government and entrepreneurs
Explain the effects of regulation on the business operation
Identify when and how to obtain appropriate legal assistance
Participate in the legislative process

Competency: Evaluate factors affecting small business management

Competency Builders:

Identify advantages and disadvantage of various types of ownership
Identify cooperative arrangements
Describe legal forms of retail businesses
Differentiate between various types of insurable business risks
Describe social and ethical problems that affect business
Classify types of government regulations that affect business
Analyze current trends in business
List costs that must be considered when starting a business
Select best location and layout for a business

Competency: Identify marketing mix

Competency Builders:

Explain importance of having the right product
Explain importance of having the product at the right place
Explain importance of having the product with the right promotion
Explain importance of having the product at the right price
Explain importance of having the product at the right time

Competency: Promote products and/or services

Competency Builders:

Explain selling function
Explain promotion function
Describe relationship of sales to promotion
Describe how to plan for special events and public relations activities
Explain importance of maintaining a check on competitors' promotions
Identify factors used to select appropriate products
Prepare merchandise/buying plan
Maintain vendor information and select appropriate vendors
Identify selling price
Keep abreast of merchandising trends

Competency: Manage customer relations

Competency Builders:
Identify advantages of customer services and accommodations
Identify advantages of attractive, comfortable facilities
Explain importance of price, quality, and variety
Use acceptable techniques in handling customer complaints

Competency: Minimize internal theft

Competency Builders:

Establish internal theft policy
Identify types of internal loss
Identify potential loss situations
Report employee theft
Follow company policies regarding internal theft
Follow security procedures

Competency: Explain financing methodologies

Competency Builders:

Explain leasing
Explain stock ownership
Explain bond ownership
Explain convertible securities
Explain bank loans

Competency: Identify costs of financial services

Competency Builders:

Classify revenue and expenses
Speculate on revenue sources and expenses
Identify start-up costs
Explain means of obtaining financial assistance
Explain importance of a sound credit rating
Outline long-range financial plans
Explain how sources of finance are used in business operations
Compare financial services available from financial institutions

Competency: Prepare financial records and reports

Competency Builders:

Record receipts and payments
Adjust cash flow upon the introduction of a variable
Justify budget items
Record income and expenditures
Report employee records for audit and taxation purposes

Competency: Explain management's role in operating a business

Competency Builders:

Explain importance of organizational skills
Identify management functions performed by entrepreneurs
Describe responsibilities and rewards of small business management
Compare specific management techniques
Explain importance of time management
Identify benefits of membership in professional/trade associations
Identify professional support system(s)
Explain need for basic accounting skills
Identify free sources of information and support
Explain importance of fundamental marketing skills
Describe benefits of continuous employee training

Competency: Practice safety precautions

Competency Builders:

Maintain safe work area
Operate equipment safely
Practice safety to prevent accidents
Follow procedures for reporting accidents
Follow safety procedures for special populations
Follow government regulations (e.g., OSHA, EPA)
Follow sanitation and hygiene procedures
Report emergencies to proper authorities
Identify emergency evacuation plans
Operate fire and safety equipment

Competency: Comply with government regulations

Competency Builders:

Identify sources of information and assistance
Identify regulations, licensing, and permits affecting business operations
Identify taxes affecting small businesses
Develop policies of compliance
Develop basic first aid skills
Monitor changing regulations

Competency: Perform management activities

Competency Builders:

Define management
Describe basic principles of good management
Identify effective leadership traits
Develop management objectives
Explain role of management in operating a business
Identify purposes of forecasting
Identify purpose of selecting appropriate marketing strategies
Develop short-term and long-term action plans
Describe importance of performance measurements and record keeping
Explain importance of keeping informed of developments and trends affecting business
Explain importance of planning for emergencies
Prepare managerial reports about production, personnel, equipment, and operational costs
Identify elements of a general budget
Describe use of credit by a business
Identify accounting statements that provide business information
Develop short/long range plans including Equal Access/Equal Opportunity (EAEO) guidelines
Develop procedures for handling employee complaints
Evaluate job applicants
Recommend employees for promotion
Identify contract laws
Describe the effects of insurance
Describe risk management alternatives (e.g., fire, theft, liability)
Describe consumer credit plans
Describe procedures for collection of accounts
Explain inventory control systems
Explain need for an equipment maintenance plan
Explain need for a facility maintenance plan

Computer (PC/Network) Coordinator

NOTE: Each TCP should respond to labor market demands in your area. Therefore, the following pages should be examined before being selected for use in TCP Part I (See "The TCP Process" Tab). For example, some units may not apply to your situation, nor might all the competencies within each unit be appropriate. Also, note that several units appear within each of the twelve occupations in this binder. Those "common" units should only appear once in the draft competency list for TCP Part I if you are compiling several occupations in a cluster format (See "TCP Matrix" Tab).

Units to Consider:	Page
Employability Skills	CC-3
Professionalism	CC-8
Teamwork	CC-12
Professional and Ethical Standards	CC-14
Economic and Business Principles	CC-16
Customer Relations	CC-20
Problem Analysis	CC-21
Project Management	CC-22
Technical Documentation	CC-23
Basic Personal Computer Concepts	CC-24
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General Office Functions	CC-31
Office Technology	CC-37
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Application Programming & Design	CC-55
Network Operations	CC-60
Basic Mainframe Concepts	CC-65
Computer Hardware Design	CC-67
Supervision	CC-71

DON'T FORGET TO INSERT YOUR ACADEMIC COMPETENCIES HERE

Communications Literacy, Mathematics Literacy, Science Literacy, and Technology Literacy have been removed so that you may insert your own academic lists here.

COMMUNICATIONS LITERACY

(e.g., Reading, Writing, Speaking, and Listening)

MATHEMATICS LITERACY

(e.g., Algebra, Geometry, Trigonometry, Calculus)

SCIENCE LITERACY

(e.g., Physical Science, Environmental Science, Agriscience, Biology, Chemistry, Physics, Anatomy & Physiology)

TECHNOLOGY LITERACY

(i.e., the impact of technology on humans and their home, work, and play environments)

Unit: Employability Skills

Competency: **Develop a career plan**

Competency Builders:

Identify current interests and aptitudes
Identify common barriers to employment
Describe strategies to overcome employment barriers
Locate resources for finding employment
Research job trends
Identify career options
Identify advantages and disadvantages of career options (in addition to other than monetary)
Identify job requirements
Investigate education/training opportunities
Evaluate personal strengths and weaknesses

Competency: Prepare for employment

Competency Builders:

Identify traditional and non-traditional employment sources
Identify present and future employment opportunities (by geographic location)
Research job opportunities, including non-traditional careers
Compare salary ranges and benefit packages
Compile occupational profile
Identify rights and responsibilities of equal employment opportunity laws
Design resume and cover letter
Target resume
Secure references
Investigate generic and specific employment tests (e.g., civil service exam; drug screening)
Use follow-up techniques to enhance employment potential
Demonstrate legible written communication skills using correct grammar, spelling, punctuation, and concise wording
Describe methods for handling illegal questions on job application forms and during interviews
Write letter of application
Research prospective employer and services performed
Explain critical importance of personal appearance, hygiene, and demeanor
Interpret job description
Demonstrate appropriate interview question and answer techniques
Demonstrate methods for handling difficult interview questions
Evaluate job offers
Write letter of acceptance
Write letter of declination
Demonstrate good listening skills
Ask for the job tactfully
Participate in extracurricular activities (e.g., student government, community projects,)

Competency: Evaluate the importance of self-esteem as an employability skill

Competency Builders:

Identify factors that affect self-esteem
Compare effects of low self-esteem and high self-esteem
Identify strategies to promote positive self-esteem

Competency: Demonstrate job retention skills

Competency Builders:

Identify employer expectations regarding job performance, work habits, attitudes, personal appearance, and hygiene
Exhibit appropriate work habits and attitude
Demonstrate ability to set priorities
Identify behaviors to establish successful working relationships
Identify alternatives for dealing with harassment, bias, and discrimination based on race, color, national origin, sex, religion, handicap, or age
Identify opportunities for advancement
List reasons for termination
List consequences of being absent frequently from job
List consequences of frequently arriving late for work
Demonstrate interpersonal relations skills (i.e., verbal and written)
Demonstrate negotiation skills
Demonstrate teamwork
Follow chain-of-command
Exhibit appropriate job dedication

Competency: Demonstrate knowledge of work ethic

Competency Builders:

Define work ethic
Identify factors that influence work ethic
Differentiate law and ethics
Describe how personal values are reflected in work ethic
Describe how interactions in the workplace affect personal work ethic
Describe how life changes affect personal work ethic

Competency: Exhibit appropriate work ethic

Competency Builders:

Use time-management techniques
Avoid personal activity during work hours
Attend work as scheduled
Adhere to company and/or governmental policies, procedures, rules, and regulations
Exercise confidentiality
Demonstrate appropriate human relations skills
Adhere to rules of conduct
Accept constructive criticism
Offer constructive criticism
Take pride in work
Resolve conflict
Manage stress
Avoid sexual connotations and harassment
Adjust to changes in the workplace
Demonstrate punctuality
Assume responsibility for personal decisions and actions
Take responsibility for assignments
Follow chain-of-command

Competency: Apply decision-making techniques

Competency Builders:

Identify decision to be made
Identify ownership of decision to be made
Identify possible alternatives and their consequences
Make decisions based on facts, legality, ethics, goals, and/or culture
Apply time factor(s)
Present decision to be implemented
Evaluate decision made
Take responsibility for decision

Competency: Apply problem-solving techniques

Competency Builders:

Identify problem
Select appropriate problem solving tools/techniques
Identify root problem cause(s)
Track root problem cause(s)
Identify possible solutions and their consequences (e.g., long term, short term, crisis)
Use resources to explore possible solutions to problem
Contrast advantages and disadvantages of each solution
Identify appropriate action
Evaluate results
Identify post-preventive action

Competency: Exhibit characteristics for job advancement

Competency Builders:

Display positive attitude
Demonstrate knowledge of position
Perform quality work
Adapt to changing situations and technology
Demonstrate capability/responsibility for different positions
Identify characteristics of effective leaders
Identify opportunities for leadership in work place/community
Demonstrate initiative to affect change in workplace
Participate in continuing education/training program
Responds appropriately to criticism from employer, supervisor, or other employees
Exhibit awareness of corporate culture
Prepare for job setbacks
Exhibit continual growth based on performance evaluation
Set realistic goals

Unit: Professionalism

Competency: Project professional image

Competency Builders:

Define professionalism
Exhibit professional appearance
Exhibit professional manners
Project professional attitude
Identify individuals' vital role in organization
Exhibit proper etiquette in professionally-related situations

Competency: Achieve individual and professional goals

Competency Builders:

Set flexible, realistic, and measurable goals
Identify potential barriers to achieving goals
Identify strategies for addressing barriers to goal achievement
Breakdown long-term goals into short-term goals
Prioritize goals
Commit to goals
Adjust goals
Obtain support for goals
Reward goal achievement

Competency: Manage personal finances

Competency Builders:

Explain need for personal management records
Balance checkbook
Identify tax obligations
Analyze how credit affects financial security
Compare types and methods of investments
Compare types and methods of borrowing
Compare types and methods of insurance
Compare types of retirement options/plans
Identify discriminatory vs. non-discriminatory expenditures

Competency: Support community well-being

Competency Builders:

Identify environmental, educational, and social issues
Participate in social and/or community activities

Competency: Achieve organizational goals

Competency Builders:

Evaluate personal goals in relation to organizational goals
Monitor progress by evaluating feedback
List responsibilities in relation to organization goals
Accomplish assigned tasks
Exercise responsibility in relation to organizational goals
Set appropriate personal performance standards
Communicate goals with supervisor and peers
Demonstrate knowledge of products and services
Promote organizational image and mission

Competency: Demonstrate positive relations in the workplace

Competency Builders:

Identify personality types of self and other
Identify various management styles
Support employer expectations
Support employer decisions
Accept constructive criticism
Give constructive feedback
Adapt to changes in workplace
List factors to consider before resigning
Write letter of resignation

Competency: **Manage stressful situations**

Competency Builders:

Accept stress as part of daily life
Identify personal and professional factors contributing to stress
Describe physical and emotional responses to stress
Evaluate positive and negative effects of stress on productivity
Identify strategies for reducing stress
Implement strategies to manage stress
Create strategies for developing and maintaining support systems

Competency: **Analyze effects of family on work and work on family**

Competency Builders:

Identify how family values, goals, and priorities are reflected in work place
Identify responsibilities and rewards associated with paid and non-paid work
Identify responsibilities and rewards associated with families
Explain how family responsibilities can conflict with work
Explain how work can conflict with family responsibilities
Explain how work-related stress can affect families
Explain how family-related stress can affect work
Identify family support systems and resources
Identify work-related support systems and resources
Communicate with family regarding work

Competency: **Apply lifelong learning skills**

Competency Builders:

Define lifelong learning
Identify factors that cause need for lifelong learning
Analyze effects of change
Identify reasons why goals change
Describe importance of flexibility and adaptability
Evaluate need for continuing education/training

Competency: Manage professional development

Competency Builders:

Identify career opportunities
Modify career plan
Participate in continuing education/training opportunities
Document continuing education/training
Read profession-related manuals, technical journals, and periodicals
Attend meetings, workshops, seminars, conferences, and demonstrations
Participate in professional organizations
Build personal/professional mentor relationship
Build personal/professional support system
Build professional network
Strengthen communication skills
Strengthen leadership skills
Strengthen management skills

Unit: Teamwork

Competency: Demonstrate knowledge of teamwork

Competency Builders:

Define empowerment
Differentiate work groups and teams
Identify conditions essential to teamwork (e.g., brainstorming)
Explain influence of culture (e.g., corporate, community) on teamwork
Identify appropriate situations for using teams
Define team structures (e.g., cross functional, quality improvement, task force, quality circles)
Identify team building concepts
Describe characteristics and dynamics of teams
Identify characteristics of effective team leaders and members
Identify responsibilities of a valuable team member
Identify methods of involving each member of a team
Explain how individuals from various backgrounds contribute to work-related situations (e.g., technical training, cultural heritage)
Explain the purpose of facilitators
Define consensus
Define reward/recognition system

Competency: Demonstrate teamwork

Competency Builders:

Identify purpose of team and intended goal (include time frames)
Structure team around purpose
Define responsibilities of team members
Contribute to efficiency and success of team
Work toward individual and team milestones
Analyze results of team project
Facilitate a team meeting
Assist team member(s) with problem
Monitor time frame
Stress continuous improvement
Accept failure as part of learning

Competency: Use teamwork to solve problems

Competency Builders:

Identify appropriate situations for using teams
Use problem-solving process in a team setting
Identify quality management processes/techniques
Identify quality assurance processes/techniques
Prepare presentation

Competency: Conduct team meetings

Competency Builders:

Plan agenda
Schedule meeting and location
Invite appropriate personnel
Solicit outside speakers as needed
Assign someone to take minutes
Facilitate introductions
Invite questions and comments and group participation
Focus team on agenda items
Assign appropriate action, time frame and accountability to tasks
Monitor time
Close meeting on time
Publish minutes in timely manner
Set ground rules
Avoid placing individual agendas above the group's agenda

Unit: Professional and Ethical Standards

Competency: Explain professional responsibilities

Competency Builders:

Explain the need for professional and ethical standards
Explain responsibility of the individual to apply ethical standards
Identify responsibility to client(s) or employer(s)
Explain employer's consequences of unprofessional and/or unethical employee behavior
Identify responsibility to self (e.g., professional appearance and limitations) and to profession
Explain importance of conflict resolution in the workplace

Competency: Describe self-managed employees

Competency Builders:

Explain the need for organizing tasks
Explain management-by-objectives
Explain importance of planning, both long-term and short-term
Explain importance of evaluating progress
Explain importance of reporting progress
Explain time management
Explain the benefit of creative brainstorming and innovative thinking

Competency: Describe intellectual property

Competency Builders:

Explain legal ownership of proprietary assets produced by the computing professional
Explain public policy
Explain rights of the originator
Explain rights of the public
Explain patent
Explain copyright
Explain licenses
Explain confidentiality

Competency: **Apply professional and ethical standards**

Competency Builders:

Identify computing industry's standards
Describe computing industry's code of ethics
Explain various ethics established by computing societies
Apply various ethics established by computing societies

Unit: Economic and Business Principles

Competency: Describe basic economic concepts

Competency Builders:

Identify importance of economic resources
Explain concept of economic resources
Explain importance of economic resources
Explain concept of economic goods and services
Differentiate between economic goods and services
Differentiate between needs and wants
Explain concept of supply and demand
Explain concept of price
Explain how supply, demand, and price are related
Explain concept of private enterprise and business ownership
Explain concept of profit
Explain concept of risk
Explain concept of competition
Explain relationship among risk, competition, and profit

Competency: Conduct training

Competency Builders:

Secure training resources, materials, and equipment
Assess training needs
Train employees
Evaluate progress
Provide appropriate feedback

Competency: Evaluate economic systems

Competency Builders:

Compare types of economic systems
Research free enterprise system
Interpret relationship between government and business
Interpret relationship between labor and management

Competency: Illustrate basic economic principles

Competency Builders:

Illustrate global economic and world market applications
Illustrate economic cycles (e.g., unemployment, recession, inflation, budget deficits)
Illustrate economic activity's affect on business (e.g., financial, competitor indicators, industry)

Competency: Analyze cost and profit influences

Competency Builders:

Identify importance of maximizing quality
Identify importance of maximizing productivity
Contrast specialized training and cross training
Contrast labor and management
Contrast government and business

Competency: Illustrate economic indicators and trends

Competency Builders:

Define gross national product and gross domestic product
Interpret impact of interest rates
Interpret impact of government spending
Interpret impact of seasonal business cycles
Interpret impact of inflation, growth, recession, and unemployment
Interpret impact of national and world events
Interpret impact of the growth of international trade

Competency: Explain basic international trade concepts

Competency Builders:

Explain nature and importance of international trade
Contrast advantages and disadvantages of marketing in international trade
Explain balance of trade concepts
Describe impact of foreign investment

Competency: Explain basic business concepts

Competency Builders:

Identify functions of business
Explain role of management
Explain role of labor
Explain concept of service as a product
Explain role of administration
Explain role of operations
Identify role of company objectives
Identify importance of ethical business practices
Identify types of ownership
Identify components of a business plan

Competency: Summarize business principles

Competency Builders:

Explain business organizations and functions
Describe business reporting and information flow
Map interface of departmental functions
Identify communication channels (e.g., formal, informal)
Explain total quality management (TQM) principles

Competency: Illustrate legal concepts

Competency Builders:

Define legal terminology
Explain business law concepts
Interpret contracts and/or legal documents
Explain relationship of laws and regulations to company contracts, policies, and procedures
Explain laws relating to working conditions, wages and hours, civil rights, social security, disability, and unemployment insurance

Competency: Explain role of marketing

Competency Builders:

Explain aspects of sound business image
Identify purposes of marketing
Identify functions of marketing
Describe effects of marketing
Explain product/service variety
Identify target markets
Define sales potential
Explain pricing strategies
Differentiate advertising campaigns
Explain advantages and disadvantages of advertising agencies
Describe sales incentive programs
Maintain marketing feedback and make appropriate changes
Identify types of marketing strategies and the advantage and disadvantage of each
    (e.g. phone, mail, person)
Design monitor plan

Competency: Serve customers/clients

Competency Builders:

Identify importance of customer
Identify customer services to provide
Relate to customers in timely fashion
Identify customer needs and wants
Gather complete and accurate information
Apply customer service concepts and terminology
Identify methods for addressing dissatisfied customers

Unit: Customer Relations

Competency: **Demonstrate positive relations with customers**

Competency Builders:

Identify importance of customers to business
Differentiate between customer needs and wants
Provide prompt and courteous service
Resolve customer inquiries and complaints and/or refer customer to appropriate person
Identify methods of addressing dissatisfied customers

Competency: **Perform scheduling functions to meet customers needs**

Competency Builders:

Create calendar/schedule
Maintain appointment calendars
Process requests for appointments
Verify appointments
Notify customer of changes in schedule
Manage scheduling conflicts

Unit: Problem Analysis

Competency: Appraise situations

Competency Builders:

Identify concerns
Classify concerns
Set priorities
Identify resolution process
Plan resolution

Competency: Analyze potential problems

Competency Builders:

Identify potential problems
Identify likely causes
Identify preventive actions
Identify contingent actions

Competency: Analyze actual problems

Competency Builders:

Identify deviation
Identify problem and possible causes
Test for probable causes
Verify cause

Competency: Analyze decisions

Competency Builders:

Identify objective(s)
Classify objective(s)
Identify alternatives
Evaluate alternatives
Assess risks
Make final choice

Unit: Project Management

Competency: Explain project management

Competency Builders:

Identify project purpose/goal
Identify project objectives
Identify work breakdown structure (WBS)
Identify resource requirements

Competency: Plan projects

Competency Builders:

Apply responsibility assignment matrix (RAM)
Apply Gantt or bar charts
Apply network diagrams
Apply critical path method (CPM)
Apply project education and review techniques
Apply software programs

Competency: Implement projects

Competency Builders:

Monitor project
Control project
Modify project

Competency: Evaluate projects

Competency Builders:

Analyze performance
Close-out project evaluation
Draw project management conclusions

Unit: Technical Documentation

Competency: Demonstrate proficiency in technical documentation

Competency Builders:

Identify parameters
Ask questions
Interpret specifications or drawings
Record process (e.g., flowchart, step-by-step)
Record data
Maintain test logs
Compile cumulative reference/record

Competency: Demonstrate proficiency in technical report writing

Competency Builders:

Use data books and cross reference/technical manuals
Identify type of report needed
Compile relevant data
Design applicable charts and graphs
Analyze data
Draw conclusions
Outline reports
Write reports
Present reports

Unit: Basic Personal Computer Concepts

Competency: Explain use of personal computers in business

Competency Builders:

Describe the impact of computer use on individuals and businesses
Identify basic applications of computers in business
Identify automated business systems and electronic media
Identify different types and sizes of computers
Define input, processor, output, and storage units
Identify how PCs integrate with other information technologies (e.g., scanners, mainframes)
Describe impact of computer use on individuals and business
Identify basic applications of computers in business

Competency: Describe personal computer operations

Competency Builders:

Explain how data is stored in main computer memory
Explain how a computer system executes program instruction
Explain electronic storage capacity
Explain electronic units of measure and how they represent data
Identify data storage techniques
Identify types of memory
Explain different types of input and output

Competency: Explain information processing

Competency Builders:

Define operating systems
Describe the difference between data files and program files
Demonstrate knowledge of system commands
Define software types and functions
Describe basic disk operation and care
List business applications of software package
List advantages and disadvantages of integrated and dedicated software

Competency: Demonstrate computer literacy

Competency Builders:

Identify computer components
Identify parallel versus serial ports
Explain differences between conventional, expanded, and extended memory
Identify use of storage media
List commands that affect disk operation
Use disk operating system to format disks
Originate directories and subdirectories
Explain common configuration variables
Explain device driver concepts
Demonstrate commands that open, close, copy, delete, and rename files on disk
Keyboard document(s) using computer

Unit: Packaged PC Applications

Competency: Explain software applications

Competency Builders:

Describe need for application software
Describe different types of software applications
Explain advantages and disadvantages of various software applications
List software sources
Explain copyright laws for software

Competency: Explain spreadsheet packages

Competency Builders:

Define spreadsheet
Demonstrate knowledge of basic spreadsheet terminology
Define components of spreadsheets
Describe implementation of spreadsheet operations in business scope

Competency: Perform word processing functions

Competency Builders:

Define word processing terminology
Explain functions of word processing software
Explain word processing applications
Use appropriate reference materials
Keyboard efficiently by touch
Use mouse
Initialize diskette
Prepare backup file
Maintain backup file
Update spelling dictionary and spell check
Perform document functions (e.g., locate, rename, delete, save, retrieve, copy)
Perform formatting functions (e.g., set margins and tabs, center, underline, bold, cut and paste)
Use edit features
Use sort features
Add page numbers to document
Add headers and footers
Print files, pages, screens and blocks of text
Verify accuracy of output
Create a document
Save a document to disk
Retrieve a document from disk
Edit an existing document
Describe word-wrap
Print a document
Create glossary file
Store boilerplate material
Compose documents at keyboard
Tabulate multiple columns
Prepare new documents from existing ones
Merge selected copy with new information
Prepare various types of table options
Index text
Format text
Integrate database, spreadsheet and graphic files
Convert documents from one system to another
Demonstrate use of computer thesaurus
Use multimedia techniques/resources

Competency: Use spreadsheet packages

Competency Builders:

Use spell check
Execute an electronic spreadsheet
Enter data, formulas, and functions
Differentiate between labels and numbers
Compare absolute and relative addressing
Speculate using "what if..." questions
Sequence keystrokes in the creation of a macro
Create database within spreadsheet and perform data query functions
Move around in spreadsheet and correct errors
Format spreadsheet
Create graphs
Print graphs
Save previously saved files
Load previously saved files
Replicate cells using copy commands
Use electronic spreadsheet to complete business application
Use spreadsheet to plan financial strategies
Prepare spreadsheet
Use multimedia techniques/resources

Competency: Explain database packages

Competency Builders:

Define database
Explain terms used in database systems
Describe common functions of database systems

Competency: Use database packages

Competency Builders:

Use database package to create, input, edit, and display fields and records
Analyze structure of database files
Perform calculations with a database file
Alter structure of database file
Sort records based on multiple fields
Identify advanced database technology
Use appropriate reference materials
Create relational database
Enter elements into database
Proofread database
Edit database
Design report formats
Apply database management system (DBMS) commands
Print reports using data from multiple databases
Use database files with other application software
Verify accuracy of output (e.g., edit reports)
Use multimedia techniques/resources

Competency: Explain function of shared environments

Competency Builders:

List purposes of a network environment
Define electronic mail
Identify advantages and disadvantages of electronic mail
Describe impact of local and wide area networks on mail delivery

Competency: Use a shared environment

Competency Builders:

Compose electronic messages
Send electronic messages using appropriate format
List categories of electronic mail service
Transmit document using electronic mail system
Monitor electronic mail

Competency: Manage software packages

Competency Builders:

Install software packages
Upgrade software packages
Document installation of software packages
Convert data files

Competency: Perform computer business graphics

Competency Builders:

Define purpose and types of graphics
Use appropriate reference materials
Create graphics
Proofread graphics
Edit graphics
Save graphics
Retrieve graphics
Print graphics to various output devices
Verify accuracy of output
Use graphic functions to create files, input data, process data, and produce output
Use graphics files with other application software

Competency: Use graphic user interface (GUI) techniques

Competency Builders:

Explain multi tasking environment
Setup data exchange between two different applications
Setup an object link between two different applications
Explain the use of dynamic link libraries

Unit: General Office Functions

Competency: Maintain a safe working environment

Competency Builders:

Comply with company safety and health rules and regulations
Use appropriate reference materials
Use equipment correctly
Use appropriate actions during emergencies
Maintain a clean and orderly work area

Competency: Maintain work flow

Competency Builders:

Organize work
Prioritize work
Apply time-management techniques
Complete assigned tasks in a timely manner
Coordinate with team members as needed

Competency: Demonstrate positive relations with customers/clients

Competency Builders:

Identify importance of repeat customers to business
Identify customer needs and wants
Provide prompt and courteous service
Resolve customer inquiries and complaints and/or refer customer to appropriate person

Competency: Perform telephone operations

Competency Builders:

Use appropriate reference materials
Display telephone etiquette
Operate equipment
Route calls
Listen assertively
Verify information
Screen calls
Record messages
Relay messages timely
Place calls
Log long-distance calls
Create telephone directories
Maintain telephone directories
Organize teleconferences
Use voice mail/messaging systems

Competency: Use facsimile machine

Competency Builders:

Explain how a facsimile machine operates
Record information regarding material being sent
Operate facsimile
Verify to sender that process has been completed
File copy of facsimile order
Maintain supplies for facsimile use
Log maintenance needs regarding facsimile

Competency: Assist visitors

Competency Builders:

Greet visitors
Screen visitors
Maintain visitor log
Make appropriate introductions
Portray professional image

Competency: **Perform scheduling functions**

Competency Builders:

Create calendar/schedule
Maintain appointment calendars
Process requests for appointments
Verify appointments

Competency: **Use job-related reference materials**

Competency Builders:

Identify reference materials
Assemble reference materials
Abstract information from reference materials
Compile data

Competency: **Coordinate meeting arrangements**

Competency Builders:

Make arrangements with meeting planners
Distribute agenda
Assemble relevant information
Notify participants
Confirm arrangements

Competency: **Generate minutes**

Competency Builders:

Record appropriate notes
Gather materials
Prepare minutes
Distribute minutes
File minutes

Competency: Coordinate travel plans

Competency Builders:

Check travel resources
Inquire about traveler's preferences
Arrange necessary transportation and lodging
Obtain passports and/or visas
Confirm arrangements
Prepare itineraries
Distribute itineraries
Alter arrangements

Competency: Perform mail functions

Competency Builders:

Identify various mail and delivery services
Process incoming mail
Distribute mail
Operate equipment
Process outgoing mail

Competency: Maintain office supplies

Competency Builders:

Prepare cost justification for purchasing supplies
Order supplies
Verify supply order against supplies
Store and secure supplies
Distribute supplies
Inventory supplies
Prepare inventory reports

Competency: Perform copying functions

Competency Builders:

Use appropriate reference materials
Operate equipment
Collate documents
Maintain equipment
Identify copying methods
Identify best copying method for task
Identify characteristics of paper stock
Keep appropriate records
Identify appropriate copyright applications

Competency: Maintain filing system

Competency Builders:

Give reasons for keeping records
Identify types of records needed
Develop proper techniques/procedures for maintaining records
Use appropriate reference materials
Describe procedure for initial inventory of records
Organize files
Index files
File information
Retrieve information
Consolidate files
Archive or destroy files
Secure files for legality and confidentiality
Follow retention schedule
Create new files
Update files
Prepare materials for filing
Sort documents
Apply cross-referencing and logging systems
Store documents
Locate documents

Competency: **Maintain hardware and software**

Competency Builders:

Use appropriate reference materials
Evaluate hardware and software
Recommend hardware and software
Schedule routine hardware maintenance
Update software
Report malfunction(s)
Maintain usage logs
Inventory hardware and software

Unit: Office Technology

Competency: Use telecommunications

Competency Builders:

Define the role of telecommunications in business
Use appropriate reference materials
Operate telephone systems
Operate fax machines

Competency: Perform basic word processing functions

Competency Builders:

Create glossary file
Store boilerplate material
Compose documents at keyboard
Tabulate multiple columns
Prepare new documents from existing ones
Merge selected copy with new information
Prepare various types of table options
Index text
Format text
Integrate database, spreadsheet, and graphics files
Convert documents from one system to another
Demonstrate use of computer thesaurus

Competency: Perform transcription functions

Competency Builders:

Identify various types of dictation/transcription equipment
Keyboard documents
Proofread documents
Edit documents
Save documents
Retrieve documents
Print documents

Competency: Use computerized filing system

Competency Builders:

Identify uses for electronic filing system
List advantages and disadvantages of electronic filing
Retrieve information from filing system
Store records electronically
Duplicate records electronically
Transmit records electronically
Maintain financial records

Competency: Perform database functions

Competency Builders:

Identify advanced database technology
Use appropriate reference materials
Create relational database
Enter elements into database
Proofread database
Edit database
Design report formats
Apply database management system (DBMS) commands
Print reports using data from multiple databases
Use database files with other application software
Verify accuracy of output

Competency: Perform desktop publishing functions

Competency Builders:

Define desktop publishing
Explain word processing functions in desktop publishing
Use appropriate reference materials
Use desktop publishing terms
Use desktop publishing software
Use graphic design and layout functions of desktop publishing
Design publications
Merge word-processing, graphics, database, and spreadsheet files
Proofread documents
Edit documents
Save documents
Retrieve documents
Print documents using various output devices

Competency: Perform computer business graphics

Competency Builders:

Define purpose and types of graphics
Use appropriate reference materials
Create graphics
Proofread graphics
Edit graphics
Save graphics
Retrieve graphics
Print graphics to various output devices
Verify accuracy of output
Use graphic functions to create files, input data, process data, and produce output
Use graphics files with other application software

Unit: General Accounting Functions

Competency: Apply arithmetical accounting skills

Competency Builders:

Compute cash discounts for various terms
Compute trade discounts
Compute extension, sales tax, and totals of sales slips
Compute markups and markdowns
Calculate rates of trade and cash discounts
Calculate unit prices given quantity prices
Calculate costs of portions of units
Solve problems involving fractions, decimals, and percentages
Solve commission problems
Solve finance-charge problems
Solve annual percentage rate problems

Competency: Apply accounting principles

Competency Builders:

Define accounting terminology
Define journals and ledgers
Identify basic accounting principles
Identify basic accounting applications
Identify computer accounting applications
Identify financial control procedures
Explain increases and decreases in accounts
Explain periodic reporting procedures
Prepare income statement
Prepare balance sheet columns
Prepare cash flow statement
Interpret balance sheets
Interpret income statements
Interpret cash-flow analysis statements

Competency: Perform manual accounting functions

Competency Builders:

Explain use of record keeping in relation to business and economic applications
Use appropriate reference materials
Analyze transactions
Use "T" accounts to label increases, decreases, and balances
Record transactions
Process receivables
Monitor expense accounts
Process payables
Prepare budgets
Process purchases
Prepare comparative (actual vs. budget) income statement

Competency: Perform automated accounting functions

Competency Builders:

Use appropriate reference materials
Operate equipment
Key data on numeric keyboard
Import or download data from computer records
Scan data from various media
Use integrated software package for simulation of accounting cycle
Set up chart of accounts for general ledger
Set up accounts payable and accounts receivable ledgers
Add accounts to general and subsidiary ledgers
Input account balances
Enter journal transactions
Process journal transaction
Prepare trial balance
Verify data and correct errors
Generate reports
Proofread accounting records and statements
Edit accounting records and statements
Save accounting records and statements
Retrieve accounting records and statements
Print accounting records and statements

Competency: **Perform spreadsheet functions**

Competency Builders:

Explain computer spreadsheet analysis
Use appropriate reference materials
Operate equipment
Create or format spreadsheet
Enter formulas
Move cells and ranges
Enter data on spreadsheet
Import or download data to spreadsheet
Apply data sort, data query, data fill, and data distribution
Export spreadsheet files to word processing, graphics and database files
Import spreadsheet files to word processing, graphics and database files
Proofread spreadsheet data
Edit spreadsheet data
Verify accuracy of output
Save spreadsheet
Retrieve spreadsheet
Print spreadsheet
Use spreadsheet functions to create files, input data, process data, and produce output
Use spreadsheet files with other application software

Competency: Perform payroll functions

Competency Builders:

Use appropriate reference materials
Collect payroll data
Process payroll
Comply with company policies and procedures
Comply with government and legal requirements
Maintain records and forms
Monitor personnel costs

Competency: Perform banking functions

Competency Builders:

Use appropriate reference materials
Prepare checks, deposit slips, and withdrawal slips
Maintain checkbook
Balance checkbook
Maintain petty cash
Balance petty cash
Explain automated banking transactions
Prepare banking records
Maintain banking records

Competency: Process cost accounting information

Competency Builders:

Define cost accounting, direct materials, direct labor and overhead
Define cost allocation methods
Identify source documents
Compute direct materials by job or process
Compute direct labor by job or process
Compute overhead rates to apply to jobs or processes
Compute cost of goods produced
Compute cost of goods sold
Journalize cost of goods produced and sold entries
Post cost of goods produced and sold entries
Compute cost of inventories
Prepare cost production reports
Prepare related records of job or process costs

Competency: **Process end-of-fiscal-period information**

Competency Builders:

Prepare worksheet
Prepare trial balance
Foot ledger accounts and compute balances
Prove equality of debits and credits
Locate errors
Record adjustments
Make appropriate extensions
Journalize basic adjusting, closing, and reversing entries
Post basic adjusting, closing, and reversing entries
Prepare basic income statement
Prepare basic balance sheet
Prepare basic cash flow statement

Unit: Computer Operations

Competency: Operate computer systems

Competency Builders:

Define job, batch, and job step
Describe data requirements
Use appropriate reference materials
Perform power-up and log-on procedures
Demonstrate basic programming skills
Use console device to interact with and respond to system messages
Secure supplies and resources
Follow processing procedures for each application/job
Run application/job
Describe scheduling priority
Describe transmittal form and transmittal log
Develop an audit trail
Handle materials and equipment in a responsible manner
Use electronic data interchange (EDI)

Competency: Maintain computer systems

Competency Builders:

Monitor system status and performance
Run diagnostics
Report computer system malfunction(s)
Report software malfunction(s)
Fix recoverable problems
Maintain security
Maintain computer log
Perform backup procedure(s)
Perform preventive maintenance
Follow log-off and power-down procedure(s)
Follow equipment maintenance procedures
Follow quality control procedures
Describe operator duties and job scheduling

Competency: **Maintain security requirements**

Competency Builders:

Apply business ethics
Follow security rules, regulations, and.codes
Implement security procedures
Document security procedures
Perform security checks

Competency: **Explain operation of peripheral devices**

Competency Builders:

Identify peripherals and operating requirements of each
Identify primary devices used for personal computer auxiliary storage
Describe how data is stored on diskettes and hard drives
List speed and storage capacities of computer auxiliary storage devices
Describe attributes of diskettes and hard disks regarding speed and storage capacity
List types of disk storage used with large computer systems
Define role of tape storage in relation to personal and large computers
Describe security issues
Explain purpose of input devices (e.g., keyboard, mouse, scanners, pens, bar code readers, credit/debit/smart cards, voice, video, gloves, joysticks)
Describe operation of output devices (e.g., voice, speaker output devices, printers, plotters, printer sharing units, SCSI interface, video display)
Describe operation of multimedia (e.g., video, audiosound)
Describe operation of storage devices (e.g., tape, disk, CD-ROM)

Competency: Operate peripheral devices

Competency Builders:

Use appropriate reference materials
Load media devices
Start media devices
Unload media devices
Import, edit, and export video and audio
Set up print devices
Operate scanner devices
Operate print devices
Maintain print devices
Monitor peripheral equipment operations
Perform routine maintenance on peripheral devices
List appropriate control procedures
Demonstrate output processing, bursting, decollating, splitting, and shredding
Transmit via modem
Receive via modem
Search a CD-ROM library
Print information from a CD-ROM library
Describe device driver

Competency: Store media

Competency Builders:

Identify need for data library
Use appropriate reference materials
Retrieve stored media (e.g., on-line, off-line, permanent, off-site)
File stored media (e.g., on-line, off-line, permanent, off-site)
Initialize media
Catalog media
Maintain supplies
Maintain media library
Maintain backup records
Maintain company and/or government standards for media security
Maintain archives of company records required by policy or law

Competency: Maintain microcomputers

Competency Builders:

Use appropriate reference materials
Install PC
Change hardware
Set up system configuration
Install software packages
Respond to system messages
Run software applications
Back up systems
Restore systems
Report computer malfunction(s)
Report software malfunction(s)
Perform preventative maintenance

Competency: Explain operating systems

Competency Builders:

Identify operating systems and their attributes
Describe how commands handle tasks in operating systems
Describe various input/output systems
Describe the purpose of operating system utilities
Differentiate between a compiler and an interpreter
Describe the processing that occurs when an interpreter is used
Describe the processing that occurs when a compiler is used

Unit: Software Methodology

Competency: Solve fundamental software methodology problems

Competency Builders:

Explain basic concepts of algorithm development and programming
Use commands to implement algorithmic solution
Create test data for algorithmic solution
Test reliability of implementing algorithmic solution
Complete project (given formal specifications) requiring incorporation of control structures
Explain principles of program design (e.g., structure, object oriented, event driven)
Solve problems involving basic control structures (e.g., sequence, selection, iteration)
Describe different data types (e.g., numeric, alphanumeric)
Explain software design process (i.e., specification through implementation and testing)
Resolve issues of program implementation (e.g., debug, documentation, audit)

Competency: Describe tools used to design software systems

Competency Builders:

Explain modular design and programming, including specifications and design tools
Explain module (i.e., subroutine) implementation
Explain module testing
Explain module documentation
Explain module maintenance
Explain data normalization as used in defining databases
Explain computer-aided software engineering (CASE)
Explain object-oriented programming (OOP)
Differentiate build versus buy decisions

Competency: Develop software requirements

Competency Builders:

Use interviewing strategies to gather information
Describe different system design models (e.g., client server, centralized)
Identify system requirements
Develop informal specifications
Develop formal specifications
Develop documentation
Apply computing standards and methodologies
Apply security measures

Competency: Design software

Competency Builders:

Explain and/or chart process design
Write software (e.g., top-down, module testing)
Debug software system
Trace software system
Test software system and data
Apply computing standards
Apply security measures
Obtain customer approval

Unit: Operating Systems

Competency: Describe operating systems

Competency Builders:

Describe microcomputer operating systems
Describe minicomputer operating systems
Describe mainframe operating systems
Describe network operating systems
Describe how commands handle tasks in operating systems
Describe various input/output systems
Describe the purpose of operating system utilities
Differentiate between a compiler and an interpreter
Describe the processing that occurs when an interpreter is used
Describe the processing that occurs when a compiler is used

Competency: Explain central processing unit (CPU) control

Competency Builders:

Explain CPU processes
Explain CPU concurrency
Explain CPU scheduling
Explain CPU multitasking
Explain CPU multiprocessing

Competency: Describe memory management

Competency Builders:

Describe functions of primary memory
Describe functions of virtual memory (e.g., paging, segmentation)
Describe functions of extended memory
Describe functions of expanded memory
Describe functions of cache memory

Competency: Explain auxiliary storage management

Competency Builders:

Explain storage management software
Identify auxiliary storage media
Describe operational characteristics of storage media
Describe storage capacities of storage media
Describe retrieval methods of storage media
Differentiate between files and directories
Differentiate among management devices (e.g., disk, tape, CD-ROM)
Explain redundant array of inexpensive disks (RAID)
Explain mirroring concepts

Competency: Store media

Competency Builders:

Identify need for data library
Use appropriate reference materials
Retrieve stored media
File stored media
Initialize media
Catalog media
Maintain supplies
Maintain media library
Maintain backup records
Maintain company and/or government standards for media security
Maintain archives of company records required by policy or law

Competency: Explain security issues

Competency Builders:

Define backup and recovery
Explain disaster planing
Define authentication (e.g., passwords, access level)
Describe encryption techniques
Describe viruses and worms
Describe vaccines
Explain operating system penetration

Competency: Maintain security requirements

Competency Builders:

Implement security procedures
Apply business ethics
Follow security rules, regulations, and codes
Document security procedures
Perform security checks

Competency: Define open system concepts

Competency Builders:

Differentiate between proprietary and open system architecture
Explain X/OPEN
Explain purpose of Open Software Foundation
Explain purpose of UNIX International
Explain purpose of Corporation for Open Systems International
Identify the OSI Model

Competency: Operate system

Competency Builders:

Review automated scheduling software
Define job, batch, and job step
Describe data requirements
Use appropriate reference materials
Perform power-up and log-on procedures
Demonstrate basic programming skills
Use console device to interact with and respond to system messages
Secure supplies and resources
Follow processing procedures for each application/job
Run application/job
Describe scheduling priority
Describe transmittal form and transmittal log
Develop an audit trail
Handle materials and equipment in a responsible manner

Competency: Maintain system

Competency Builders:

Use appropriate reference materials
Monitor system status and performance
Run diagnostics
Respond to system messages
Report computer system malfunction(s)
Report software malfunction(s)
Fix recoverable problems
Maintain security
Maintain computer log
Perform backup procedure(s)
Perform preventative maintenance procedures
Change hardware
Install software packages
Restore system
Follow log-off and power-down procedure(s)

Competency: Administer system

Competency Builders:

Manage complete system
Manage network
Manage operating system
Manage applications

Unit: Application Programming and Design

Competency: Explain computer applications

Competency Builders:

Explain hardware component functions
Explain uses of a computer
Describe major events in the development of computers
Describe major types of software and their functions
Read computer publications
Interpret computer trends
Describe batch processing
Describe interactive processing
Describe ad hoc reporting

Competency: Develop computer applications

Competency Builders:

Use appropriate reference materials
Analyze specifications
Divide design specifications into logical blocks (e.g. flowchart, data flow diagram, system flows record and layout)
Identify constraints
Identify programming language
Identify input and output (I/O) requirements
Prepare logic using program-flow diagram

Competency: Explain programming theory

Competency Builders:

Explain the meaning of "reserved word"
Describe arrays and tables
Explain compilers
Differentiate between system documentation and user documentation
Describe what is meant by top-down design and structured programming
Identify the steps in the program development cycle
Design a decision table for a specified problem
Identify the steps and procedures required to develop test data
Explain the difference between recursion and iteration
Describe what is meant by data validation
Describe what is meant by "object oriented" programming

Competency: Apply programming theory

Competency Builders:

Demonstrate use of working storage variables
Write source code per standards
Use spacing charts to plan program output
Code a modular program
Interpret a simple hierarchy chart
Interpret a simple pseudocode design
Create a flow-chart
Perform program sorts
Demonstrate use of loops
Demonstrate use of logical operators (e.g., AND, OR, NOT)
Code error-handling techniques
Demonstrate use of data files

Competency: Explain programming languages

Competency Builders:

Outline history of programming languages
Identify primary use of programming languages and their weaknesses
List rules for naming variables

Competency: Use programming language

Competency Builders:

Perform character manipulation
Declare variables
Initialize variables
Modify variables
Demonstrate a function
Demonstrate a library
Demonstrate a subroutine
Demonstrate system calls
Apply conditional statements
Evaluate series of logical expressions
Code separate addition, subtraction, multiplication, and division statements
Declare a one-dimensional array
Initialize an array
Generate executable code

Competency: Use operating system

Competency Builders:

Apply appropriate text editor
Apply operating system commands
Apply operating system utilities

Competency: Test programs

Competency Builders:

Explain debugging statements
Perform debugging functions
Debug compilation errors
Create test data that checks logic and error routines
Execute program with test data
Correct execution errors
Perform unit and integration test
Analyze test results
Define auto testing software

Competency: Apply programming skills

Competency Builders:

Demonstrate knowledge of file and table processing
Develop program using data validation techniques
Develop interactive process
Develop menu-driven program
Develop database program
Develop program that utilizes a recursive process
Develop program using copy libraries
Develop program using system calls
Develop program using design tool

Competency: Develop documentation

Competency Builders:

Prepare program documentation
Prepare user documentation
Prepare data-flow diagrams
Update design documentation

Competency: Demonstrate knowledge of the systems design process

Competency Builders:

Identify processing requirements
Identify programming language
Use appropriate reference materials
Describe role of user and management in the development of a computer system
Describe use of data flow diagrams, system flowcharts and display screen layout forms
Conduct interviews
Design system inputs and outputs and processes
Create design documentation
Present system design

Competency: Evaluate system

Competency Builders:

Identify evaluation criteria
Develop test plan
Analyze test data
Present results
Recommend corrective action, if appropriate
Explain iterative nature of system evaluation

Competency: Implement system

Competency Builders:

Identify implementation plan
Identify conversion method
Train personnel
Present implementation plan

Unit: Network Operations

Competency: Explain communication standards

Competency Builders:

Identify the seven layers of the International Organization Standard's Open System Interconnection (OSI) Model
Describe each OSI layer, including their interconnectivity
Identify software standards for subnet, presentation layers, and file servers

Competency: Describe network structures

Competency Builders:

Differentiate topologies (e.g., hierarchical, ring, star)
Differentiate architecture(s)
Explain layering
Describe protocols (e.g., TCP/IP, IPX/SPX, etc..)
Describe frame types (e.g., SNA<802.3, 802.5)
Define local area network
Define different types of LANs
Differentiate between network operating systems and data distribution systems
Identify advantages and disadvantages of various LAN operating systems
List duties of LAN supervisor

Competency: Explain network transmission and media

Competency Builders:

Explain signals
Explain patterns
Explain error detection and correction
Explain speed of transmission
Explain use of media
Explain use of equipment
Explain role of network manager

Competency: Explain network connectivity and interoperability

Competency Builders:

Identify equipment connecting devices
Differentiate between sync and async devices
Identify software connecting devices
Identify media connecting devices
Identify type of interoperability (e.g., peer-to-peer, peer-to-host)
Identify problems of mixed vendor network implementation
Describe internetworking solutions
Describe cabling schemes and alternatives
Identify network topologies
List pros and cons of network interface cards
List pros and cons of network servers
Explain why internetting is useful or necessary
Describe levels at which internetting can occur
Identify protocols used for remote interconnecting and when each should be used
List common pitfalls when networking computers
Identify method used to evaluate emulators
Describe gateways (e.g., mainframe, protocol)

Competency: Describe network operating systems

Competency Builders:

Identify responsibilities of a network operating system
Explain installation procedure for network operating systems
Explain commands needed to use network operating systems
List characteristics of a network interface card (NIC)
Define criteria used to describe network servers
Define criteria used to evaluate network operating systems

Competency: Describe potential networking problems with applications software

Competency Builders:

Describe potential hard disk compatibility problems
Differentiate between site multi user and single user licenses
Describe necessary precautions included in programs used on networks

Competency: Explain network management

Competency Builders:

List steps in mapping a network
Explain why files must be organized according to owners, users, and privileges
Describe common standards for setting up and naming files
List criteria used to determine if a file should be network accessible
Identify methods to increase performance
Define hierarchical directory
Explain methods used to determine how many servers should be used
State reasons for channel and cable bottlenecks

Competency: Explain network security

Competency Builders:

Explain need for data protection
Identify common backup devices
Explain criteria for selecting a tape system
Differentiate between hard and soft errors
Contrast streaming and file-by-file backup systems
Explain process for archiving files
Explain necessity for network security
Identify levels of network sedulity and reasons for their existence

Competency: Explain installation procedures

Competency Builders:

Explain why an installation log is necessary
Identify methods of distributing cable, including modeling examples
Identify problems associated with cable installation
Describe types of cable, cable connectors, and grounding techniques
Explain cable testing and tolerance levels
Identify sources of interference and include methods to overcome each

Competency: Use network knowledge

Competency Builders:

Use electronic/voice/multi-media mail
Share files
Use dial-in access
Make backups
Share resources
Explain software control
Apply security and authentication

Competency: Apply network operations

Competency Builders:

Assess user needs to determine which LAN operating systems to use
Demonstrate applications used on LANs
Describe how the network protocols work together
Operate the system in a multi-user environment
Demonstrate knowledge of various networks and compatibility
Differentiate among various topologies
Identify which network operating system to use
Build synchronous transmission circuit using a modem
Build synchronous transmission circuit using a modem
Connect PCs to form a network
Connect two PCs networks
Perform file to file copy in a PC network
Implement print queue in a PC network
Configure file server in a PC network
Connect PC to mini or mainframe
Link mixed vendors (e.g., PC to Mac)
Interconnect via backbone network
Build small ethernet or token ring network

Competency: Administer network

Competency Builders:

Use appropriate reference materials
Apply current LAN concepts and technology
Attach computers and peripherals to LAN
Change computer hardware
Set up system configuration
Install LAN manager software
Install software packages
Respond to system messages
Troubleshoot system
Run software applications
Back up and restore systems
Perform system analysis
Use security procedures
Perform preventative maintenance
Select access control and security
Outline resource management
Install cabling
Install network
Analyze network operations
Check physical and virtual connections
Modify network
Apply standards
Acquire licensing
Plan disaster recovery
Address protocols (e. g., ethernet, token ring, Arcnet)
Monitor network activity/performance

Competency: Perform network maintenance and diagnostics

Competency Builders:

Execute network diagnostics program for software
Execute network diagnostics program for hardware
Apply standard and protocols
Document action(s) taken

Unit: Basic Mainframe Concepts

Competency: Describe mainframe operations

Competency Builders:

Identify types of mainframe memory
Identify data storage techniques used by mainframe operation
Explain how data is stored in mainframe computer memory
Explain how a mainframe computer system executes program instruction
Explain mainframe storage capacity

Competency: Describe interface techniques

Competency Builders:

Identify elements of mainframe user interface
Identify mainframe hardware components and their advantages and disadvantages
Trace evolution of user interface software for mainframe
Illustrate various forms of mainframe menus
Describe mainframe graphical user interface (GUI)

Competency: Explain information processing cycle

Competency Builders:

Define mainframe operating systems
Define data processing terminology
Describe the difference between data files and program files
Differentiate between internal and external commands
Differentiate among interactive, transaction-oriented, and batch processing
Describe processing capabilities of computer operations
Specify roles of systems, procedures, and personnel in mainframe information processing
Explain functions of input, output, revision, distribution, storage, and reproduction

Competency: **Explain purpose of mainframe database systems**

Competency Builders:

Define mainframe database
Explain terms used in mainframe database systems
Describe common function of mainframe database systems

Competency: **Use mainframe database system**

Competency Builders:

Enter data into database and sort
Enter data into database and retrieve
Enter data into database and select
Prepare formatted business forms using mainframe database

Unit: Computer Hardware Design

Competency: Explain standards

Competency Builders:

Identify OSI, IEEE, ISO, and CCITT standards
Identify standard setting bodies and their proclamations
Explain conformance and APIs

Competency: Describe computational site environment

Competency Builders:

Identify environmental requirements
Identify power requirements and power supplies
Identify ergonomic issues
Identify structural capacities
Identify local codes

Competency: Differentiate among architecture and processor types

Competency Builders:

Describe architecture and processors of microcomputers
Describe architecture and processors of minicomputers
Describe architecture and processors of mainframes
Explain instruction sets

Competency: Analyze computer systems architecture

Competency Builders:

Describe the principles and operation of addresses and interrupts
Describe the principles and operation of volatile and non-volatile memory
Describe the principles and operation of advanced memory techniques
Define individual system blocks
Draw systems configuration in block detail
Interpret computer acronyms
Describe priorities and interrupts at systems level
Identify direct memory access data handling system(s)
Define functions of advanced memory techniques (e.g., virtual, pipeline, cache)
Describe how commands handle tasks in operating systems
Describe various input/output systems
Describe the purpose of operating system utilities
Differentiate between a compiler and an interpreter
Describe the processing that occurs when an interpreter is used
Describe the processing that occurs when a compiler is used

Competency: Describe operation of chips and boards

Competency Builders:

Describe chip configuration and structure
Describe operation of memory boards, including chip sizes
Describe operation of mother boards
Describe operation of compressor boards (e.g., math, graphics, FAX, modems, voice)
Describe operation of controller cards
Describe operation of network interface cards
Describe operation of PCMCIA

Competency: Describe operation of connectivity devices

Competency Builders:

Describe operation of baluns
Describe operation of multiplexers, MODEMS, CODECS, DSU
Describe operation of switches, gateways, bridges, routers, brouters, and repeaters
Describe operation of test equipment (e.g., protocol analyzers)

Competency: **Explain operation of microprocessor systems**

Competency Builders:

Describe essential components of microprocessor and their functions
Describe principles and operation of BUS concepts (e.g., VESA, EISA)
Describe principles and operation of types of memory circuits
Identify operating systems (e.g., DOS, OS/2, UNIX) and their attributes
Describe microprocessor instructions sets
Describe principles and operation of microprocessor machine code
Demonstrate use of microprocessor machine code
Decode microprocessor machine code
Identify types of input and output devices and peripherals
Describe principles and operation of storage devices
Interface input and output ports to peripherals
Identify central processing unit building blocks and their uses
Identify levels of computer languages

Competency: **Troubleshoot a microcomputer system**

Competency Builders:

Draw system configuration in block detail
Identify priorities and interrupts at system level
Operate computer system architecture
Repair computer system architecture
Demonstrate use of volatile and non-volatile memory
Repair or replace volatile and non-volatile memory

Competency: **Install computer system (i.e., monitor, keyboard, disk drive, and printer)**

Competency Builders:

Configure system
Verify system
Print copy of root directory to printer
Document system installation

Competency: Explain operation of peripheral equipment

Competency Builders:

Identify types of card and paper-tape equipment and interface controllers
Define printer types and interface controllers
Explain the operation of typical magnetic tape equipment and interface controllers
Describe disk equipment and interface controllers
Define environmental requirements for peripherals and media

Competency: Repair peripheral equipment

Competency Builders:

Troubleshoot and repair disk equipment and interface controllers
Troubleshoot and repair display terminals and interface controllers, including touch screens
Troubleshoot and repair printers and interface controllers, including laser printers
Troubleshoot and repair mouse
Troubleshoot and repair bar code scanner
Troubleshoot and repair CD-ROM

Competency: Explain communication interfacing

Competency Builders:

Identify EIA, IEEE and CCITT standards
Differentiate sync and async devices
Define networking levels or layers
Define protocols
Define packet switching
Define multi-user systems

Unit: Supervision

Competency: **Manage human resources**

Competency Builders:

Apply appropriate management and leadership styles
Use foresight to anticipate and manage change
Display managerial and supervisory skills
Apply human relations skills
Develop management objectives
Create and/or implement organizational charts
Clarify company policies and procedures
Maintain office procedures manual(s)
Establish office procedures
Prepare and/or monitor budgets
Prepare managerial reports
Analyze production reports
Maintain appropriate work environment
Conduct tours
Monitor progress
Prepare and communicate productivity reports
Provide and/or coordinate training for new policies
Troubleshoot office problems
Communicate performance expectations
Counsel employees about career objectives
Maintain performance records
Adhere to company policies regarding discrimination and harassment
Address employees regarding disciplinary action(s)
Recommend employees for promotion
Explain procedure for handling grievances
Evaluate employee performance
Document personnel issues

Competency: Manage projects

Competency Builders:

Conduct needs analysis
Set priorities
Research information
Develop goals and objectives
Develop strategic plan
Develop project budget
Apply forecasting techniques
Apply prioritizing techniques
Schedule work assignments
Collect data
Analyze data
Act on data
Monitor project progress
Meet project timelines
Monitor budget
Apply quality measures and counter measures

Competency: Manage work flow

Competency Builders:

Plan office layout for workflow
Create organizational charts
Communicate operating policies and procedures
Maintain office procedures manual(s)
Identify production standards
Interface with other departments
Prioritize work
Assign work
Delegate work
Provide instruction
Monitor progress
Complete productivity and/or managerial reports
Complete assigned tasks in a timely manner
Coordinate with team members

Competency: Conduct staff/team meetings

Competency Builders:

Plan meeting
Set agenda
Set and schedule meeting
Schedule meeting room
Invite appropriate personnel
Identify need for outside speakers
Assign someone to take minutes
Make introductions
Invite questions and comments, and group participation
Focus on agenda items, but maintain issues list as they arise
Decide appropriate action, time frame, and accountability to tasks
Monitor time
Close meeting on time
Publish minutes in timely manner to appropriate persons

Competency: Conduct training

Competency Builders:

Secure training resources, materials, and equipment
Assess training needs
Train employees
Evaluate progress
Provide appropriate feedback
Document training participation

Network Systems Technician

NOTE: Each TCP should respond to labor market demands in your area. Therefore, the following pages should be examined before being selected for use in TCP Part I (See "The TCP Process" Tab). For example, some units may not apply to your situation, nor might all the competencies within each unit be appropriate. Also, note that several units appear within each of the twelve occupations in this binder. Those "common" units should only appear once in the draft competency list for TCP Part I if you are compiling several occupations in a cluster format (See "TCP Matrix" Tab).

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DON'T FORGET TO INSERT YOUR ACADEMIC COMPETENCIES HERE

Communications Literacy, Mathematics Literacy, Science Literacy, and Technology Literacy have been removed so that you may insert your own academic lists here.

COMMUNICATIONS LITERACY

(e.g., Reading, Writing, Speaking, and Listening)

MATHEMATICS LITERACY

(e.g., Algebra, Geometry, Trigonometry, Calculus)

SCIENCE LITERACY

(e.g., Physical Science, Environmental Science, Agriscience, Biology, Chemistry, Physics, Anatomy & Physiology)

TECHNOLOGY LITERACY

(i.e., the impact of technology on humans and their home, work, and play environments)

Unit: Employability Skills

Competency: Develop a career plan

Competency Builders:

Identify current interests and aptitudes
Identify common barriers to employment
Describe strategies to overcome employment barriers
Locate resources for finding employment
Research job trends
Identify career options
Identify advantages and disadvantages of career options (in addition to other than monetary)
Identify job requirements
Investigate education/training opportunities
Evaluate personal strengths and weaknesses

Competency: Prepare for employment

Competency Builders:

Identify traditional and non-traditional employment sources
Identify present and future employment opportunities (by geographic location)
Research job opportunities, including non-traditional careers
Compare salary ranges and benefit packages
Compile occupational profile
Identify rights and responsibilities of equal employment opportunity laws
Design resume and cover letter
Target resume
Secure references
Investigate generic and specific employment tests (e.g., civil service exam; drug screening)
Use follow-up techniques to enhance employment potential
Demonstrate legible written communication skills using correct grammar, spelling, punctuation, and concise wording
Describe methods for handling illegal questions on job application forms and during interviews
Write letter of application
Research prospective employer and services performed
Explain critical importance of personal appearance, hygiene, and demeanor
Interpret job description
Demonstrate appropriate interview question and answer techniques
Demonstrate methods for handling difficult interview questions
Evaluate job offers
Write letter of acceptance
Write letter of declination
Demonstrate good listening skills
Ask for the job tactfully
Participate in extracurricular activities (e.g., student government, community projects,)

Competency: Evaluate the importance of self-esteem as an employability skill

Competency Builders:

Identify factors that affect self-esteem
Compare effects of low self-esteem and high self-esteem
Identify strategies to promote positive self-esteem

Competency: Demonstrate job retention skills

Competency Builders:

Identify employer expectations regarding job performance, work habits, attitudes, personal appearance, and hygiene
Exhibit appropriate work habits and attitude
Demonstrate ability to set priorities
Identify behaviors to establish successful working relationships
Identify alternatives for dealing with harassment, bias, and discrimination based on race, color, national origin, sex, religion, handicap, or age
Identify opportunities for advancement
List reasons for termination
List consequences of being absent frequently from job
List consequences of frequently arriving late for work
Demonstrate interpersonal relations skills (i.e., verbal and written)
Demonstrate negotiation skills
Demonstrate teamwork
Follow chain-of-command
Exhibit appropriate job dedication

Competency: Demonstrate knowledge of work ethic

Competency Builders:

Define work ethic
Identify factors that influence work ethic
Differentiate law and ethics
Describe how personal values are reflected in work ethic
Describe how interactions in the workplace affect personal work ethic
Describe how life changes affect personal work ethic

Competency: Exhibit appropriate work ethic

Competency Builders:

Use time-management techniques
Avoid personal activity during work hours
Attend work as scheduled
Adhere to company and/or governmental policies, procedures, rules, and regulations
Exercise confidentiality
Demonstrate appropriate human relations skills
Adhere to rules of conduct
Accept constructive criticism
Offer constructive criticism
Take pride in work
Resolve conflict
Manage stress
Avoid sexual connotations and harassment
Adjust to changes in the workplace
Demonstrate punctuality
Assume responsibility for personal decisions and actions
Take responsibility for assignments
Follow chain-of-command

Competency: Apply decision-making techniques

Competency Builders:

Identify decision to be made
Identify ownership of decision to be made
Identify possible alternatives and their consequences
Make decisions based on facts, legality, ethics, goals, and/or culture
Apply time factor(s)
Present decision to be implemented
Evaluate decision made
Take responsibility for decision

Competency: Apply problem-solving techniques

Competency Builders:

Identify problem
Select appropriate problem solving tools/techniques
Identify root problem cause(s)
Track root problem cause(s)
Identify possible solutions and their consequences (e.g., long term, short term, crisis)
Use resources to explore possible solutions to problem
Contrast advantages and disadvantages of each solution
Identify appropriate action
Evaluate results
Identify post-preventive action

Competency: Exhibit characteristics for job advancement

Competency Builders:

Display positive attitude
Demonstrate knowledge of position
Perform quality work
Adapt to changing situations and technology
Demonstrate capability/responsibility for different positions
Identify characteristics of effective leaders
Identify opportunities for leadership in work place/community
Demonstrate initiative to affect change in workplace
Participate in continuing education/training program
Responds appropriately to criticism from employer, supervisor, or other employees
Exhibit awareness of corporate culture
Prepare for job setbacks
Exhibit continual growth based on performance evaluation
Set realistic goals

Unit: Professionalism

Competency: **Project professional image**

Competency Builders:

Define professionalism
Exhibit professional appearance
Exhibit professional manners
Project professional attitude
Identify individuals' vital role in organization
Exhibit proper etiquette in professionally-related situations

Competency: **Achieve individual and professional goals**

Competency Builders:

Set flexible, realistic, and measurable goals
Identify potential barriers to achieving goals
Identify strategies for addressing barriers to goal achievement
Breakdown long-term goals into short-term goals
Prioritize goals
Commit to goals
Adjust goals
Obtain support for goals
Reward goal achievement

Competency: **Manage personal finances**

Competency Builders:

Explain need for personal management records
Balance checkbook
Identify tax obligations
Analyze how credit affects financial security
Compare types and methods of investments
Compare types and methods of borrowing
Compare types and methods of insurance
Compare types of retirement options/plans
Identify discriminatory vs. non-discriminatory expenditures

Competency: Support community well-being

Competency Builders:

Identify environmental, educational, and social issues
Participate in social and/or community activities

Competency: Achieve organizational goals

Competency Builders:

Evaluate personal goals in relation to organizational goals
Monitor progress by evaluating feedback
List responsibilities in relation to organization goals
Accomplish assigned tasks
Exercise responsibility in relation to organizational goals
Set appropriate personal performance standards
Communicate goals with supervisor and peers
Demonstrate knowledge of products and services
Promote organizational image and mission

Competency: Demonstrate positive relations in the workplace

Competency Builders:

Identify personality types of self and other
Identify various management styles
Support employer expectations
Support employer decisions
Accept constructive criticism
Give constructive feedback
Adapt to changes in workplace
List factors to consider before resigning
Write letter of resignation

Competency: Manage stressful situations

Competency Builders:

Accept stress as part of daily life
Identify personal and professional factors contributing to stress
Describe physical and emotional responses to stress
Evaluate positive and negative effects of stress on productivity
Identify strategies for reducing stress
Implement strategies to manage stress
Create strategies for developing and maintaining support systems

Competency: Analyze effects of family on work and work on family

Competency Builders:

Identify how family values, goals, and priorities are reflected in work place
Identify responsibilities and rewards associated with paid and non-paid work
Identify responsibilities and rewards associated with families
Explain how family responsibilities can conflict with work
Explain how work can conflict with family responsibilities
Explain how work-related stress can affect families
Explain how family-related stress can affect work
Identify family support systems and resources
Identify work-related support systems and resources
Communicate with family regarding work

Competency: Apply lifelong learning skills

Competency Builders:

Define lifelong learning
Identify factors that cause need for lifelong learning
Analyze effects of change
Identify reasons why goals change
Describe importance of flexibility and adaptability
Evaluate need for continuing education/training

Competency: Manage professional development

Competency Builders:

Identify career opportunities
Modify career plan
Participate in continuing education/training opportunities
Document continuing education/training
Read profession-related manuals, technical journals, and periodicals
Attend meetings, workshops, seminars, conferences, and demonstrations
Participate in professional organizations
Build personal/professional mentor relationship
Build personal/professional support system
Build professional network
Strengthen communication skills
Strengthen leadership skills
Strengthen management skills

Unit: Teamwork

Competency: Demonstrate knowledge of teamwork

Competency Builders:

Define empowerment
Differentiate work groups and teams
Identify conditions essential to teamwork (e.g., brainstorming)
Explain influence of culture (e.g., corporate, community) on teamwork
Identify appropriate situations for using teams
Define team structures (e.g., cross functional, quality improvement, task force, quality circles)
Identify team building concepts
Describe characteristics and dynamics of teams
Identify characteristics of effective team leaders and members
Identify responsibilities of a valuable team member
Identify methods of involving each member of a team
Explain how individuals from various backgrounds contribute to work-related situations (e.g., technical training, cultural heritage)
Explain the purpose of facilitators
Define consensus
Define reward/recognition system

Competency: Demonstrate teamwork

Competency Builders:

Identify purpose of team and intended goal (include time frames)
Structure team around purpose
Define responsibilities of team members
Contribute to efficiency and success of team
Work toward individual and team milestones
Analyze results of team project
Facilitate a team meeting
Assist team member(s) with problem
Monitor time frame
Stress continuous improvement
Accept failure as part of learning

Competency: Use teamwork to solve problems

Competency Builders:

Identify appropriate situations for using teams
Use problem-solving process in a team setting
Identify quality management processes/techniques
Identify quality assurance processes/techniques
Prepare presentation

Competency: Conduct team meetings

Competency Builders:

Plan agenda
Schedule meeting and location
Invite appropriate personnel
Solicit outside speakers as needed
Assign someone to take minutes
Facilitate introductions
Invite questions and comments and group participation
Focus team on agenda items
Assign appropriate action, time frame and accountability to tasks
Monitor time
Close meeting on time
Publish minutes in timely manner
Set ground rules
Avoid placing individual agendas above the group's agenda

Unit: Professional and Ethical Standards

Competency: Explain professional responsibilities

Competency Builders:

Explain the need for professional and ethical standards
Explain responsibility of the individual to apply ethical standards
Identify responsibility to client(s) or employer(s)
Explain employer's consequences of unprofessional and/or unethical employee behavior
Identify responsibility to self (e.g., professional appearance and limitations) and to profession
Explain importance of conflict resolution in the workplace

Competency: Describe self-managed employees

Competency Builders:

Explain the need for organizing tasks
Explain management-by-objectives
Explain importance of planning, both long-term and short-term
Explain importance of evaluating progress
Explain importance of reporting progress
Explain time management
Explain the benefit of creative brainstorming and innovative thinking

Competency: Describe intellectual property

Competency Builders:

Explain legal ownership of proprietary assets produced by the computing professional
Explain public policy
Explain rights of the originator
Explain rights of the public
Explain patent
Explain copyright
Explain licenses
Explain confidentiality

Competency: **Apply professional and ethical standards**

Competency Builders:

Identify computing industry's standards
Describe computing industry's code of ethics
Explain various ethics established by computing societies
Apply various ethics established by computing societies

Unit: Economic and Business Principles

Competency: Describe basic economic concepts

Competency Builders:

Identify importance of economic resources
Explain concept of economic resources
Explain importance of economic resources
Explain concept of economic goods and services
Differentiate between economic goods and services
Differentiate between needs and wants
Explain concept of supply and demand
Explain concept of price
Explain how supply, demand, and price are related
Explain concept of private enterprise and business ownership
Explain concept of profit
Explain concept of risk
Explain concept of competition
Explain relationship among risk, competition, and profit

Competency: Conduct training

Competency Builders:

Secure training resources, materials, and equipment
Assess training needs
Train employees
Evaluate progress
Provide appropriate feedback

Competency: Evaluate economic systems

Competency Builders:

Compare types of economic systems
Research free enterprise system
Interpret relationship between government and business
Interpret relationship between labor and management

Competency: Illustrate basic economic principles

Competency Builders:

Illustrate global economic and world market applications
Illustrate economic cycles (e.g., unemployment, recession, inflation, budget deficits)
Illustrate economic activity's affect on business (e.g., financial, competitor indicators, industry)

Competency: Analyze cost and profit influences

Competency Builders:

Identify importance of maximizing quality
Identify importance of maximizing productivity
Contrast specialized training and cross training
Contrast labor and management
Contrast government and business

Competency: Illustrate economic indicators and trends

Competency Builders:

Define gross national product and gross domestic product
Interpret impact of interest rates
Interpret impact of government spending
Interpret impact of seasonal business cycles
Interpret impact of inflation, growth, recession, and unemployment
Interpret impact of national and world events
Interpret impact of the growth of international trade

Competency: Explain basic international trade concepts

Competency Builders:

Explain nature and importance of international trade
Contrast advantages and disadvantages of marketing in international trade
Explain balance of trade concepts
Describe impact of foreign investment

Competency: Explain basic business concepts

Competency Builders:

Identify functions of business
Explain role of management
Explain role of labor
Explain concept of service as a product
Explain role of administration
Explain role of operations
Identify role of company objectives
Identify importance of ethical business practices
Identify types of ownership
Identify components of a business plan

Competency: Summarize business principles

Competency Builders:

Explain business organizations and functions
Describe business reporting and information flow
Map interface of departmental functions
Identify communication channels (e.g., formal, informal)
Explain total quality management (TQM) principles

Competency: Illustrate legal concepts

Competency Builders:

Define legal terminology
Explain business law concepts
Interpret contracts and/or legal documents
Explain relationship of laws and regulations to company contracts, policies, and procedures
Explain laws relating to working conditions, wages and hours, civil rights, social security, disability, and unemployment insurance

Competency: Explain role of marketing

Competency Builders:

Explain aspects of sound business image
Identify purposes of marketing
Identify functions of marketing
Describe effects of marketing
Explain product/service variety
Identify target markets
Define sales potential
Explain pricing strategies
Differentiate advertising campaigns
Explain advantages and disadvantages of advertising agencies
Describe sales incentive programs
Maintain marketing feedback and make appropriate changes
Identify types of marketing strategies and the advantage and disadvantage of each (e.g. phone, mail, person)
Design monitor plan

Competency: Serve customers/clients

Competency Builders:

Identify importance of customer
Identify customer services to provide
Relate to customers in timely fashion
Identify customer needs and wants
Gather complete and accurate information
Apply customer service concepts and terminology
Identify methods for addressing dissatisfied customers

Unit: Customer Relations

Competency: **Demonstrate positive relations with customers**

Competency Builders:

Identify importance of customers to business
Differentiate between customer needs and wants
Provide prompt and courteous service
Resolve customer inquiries and complaints and/or refer customer to appropriate person
Identify methods of addressing dissatisfied customers

Competency: **Perform scheduling functions to meet customers needs**

Competency Builders:

Create calendar/schedule
Maintain appointment calendars
Process requests for appointments
Verify appointments
Notify customer of changes in schedule
Manage scheduling conflicts

Unit: Problem Analysis

Competency: Appraise situations

Competency Builders:

Identify concerns
Classify concerns
Set priorities
Identify resolution process
Plan resolution

Competency: Analyze potential problems

Competency Builders:

Identify potential problems
Identify likely causes
Identify preventive actions
Identify contingent actions

Competency: Analyze actual problems

Competency Builders:

Identify deviation
Identify problem and possible causes
Test for probable causes
Verify cause

Competency: Analyze decisions

Competency Builders:

Identify objective(s)
Classify objective(s)
Identify alternatives
Evaluate alternatives
Assess risks
Make final choice

Unit: Project Management

Competency: **Explain project management**

Competency Builders:

Identify project purpose/goal
Identify project objectives
Identify work breakdown structure (WBS)
Identify resource requirements

Competency: **Plan projects**

Competency Builders:

Apply responsibility assignment matrix (RAM)
Apply Gantt or bar charts
Apply network diagrams
Apply critical path method (CPM)
Apply project education and review techniques
Apply software programs

Competency: **Implement projects**

Competency Builders:

Monitor project
Control project
Modify project

Competency: **Evaluate projects**

Competency Builders:

Analyze performance
Close-out project evaluation
Draw project management conclusions

Unit: Technical Documentation

Competency: **Demonstrate proficiency in technical documentation**

Competency Builders:

Identify parameters
Ask questions
Interpret specifications or drawings
Record process (e.g., flowchart, step-by-step)
Record data
Maintain test logs
Compile cumulative reference/record

Competency: **Demonstrate proficiency in technical report writing**

Competency Builders:

Use data books and cross reference/technical manuals
Identify type of report needed
Compile relevant data
Design applicable charts and graphs
Analyze data
Draw conclusions
Outline reports
Write reports
Present reports

Unit: Basic Personal Computer Concepts

Competency: Explain use of personal computers in business

Competency Builders:

Describe the impact of computer use on individuals and businesses
Identify basic applications of computers in business
Identify automated business systems and electronic media
Identify different types and sizes of computers
Define input, processor, output, and storage units
Identify how PCs integrate with other information technologies (e.g., scanners, mainframes)
Describe impact of computer use on individuals and business
Identify basic applications of computers in business

Competency: Describe personal computer operations

Competency Builders:

Explain how data is stored in main computer memory
Explain how a computer system executes program instruction
Explain electronic storage capacity
Explain electronic units of measure and how they represent data
Identify data storage techniques
Identify types of memory
Explain different types of input and output

Competency: Explain information processing

Competency Builders:

Define operating systems
Describe the difference between data files and program files
Demonstrate knowledge of system commands
Define software types and functions
Describe basic disk operation and care
List business applications of software package
List advantages and disadvantages of integrated and dedicated software

Competency: **Demonstrate computer literacy**

Competency Builders:

Identify computer components
Identify parallel versus serial ports
Explain differences between conventional, expanded, and extended memory
Identify use of storage media
List commands that affect disk operation
Use disk operating system to format disks
Originate directories and subdirectories
Explain common configuration variables
Explain device driver concepts
Demonstrate commands that open, close, copy, delete, and rename files on disk
Keyboard document(s) using computer

Unit: Packaged PC Applications

Competency: Explain software applications

Competency Builders:

Describe need for application software
Describe different types of software applications
Explain advantages and disadvantages of various software applications
List software sources
Explain copyright laws for software

Competency: Explain spreadsheet packages

Competency Builders:

Define spreadsheet
Demonstrate knowledge of basic spreadsheet terminology
Define components of spreadsheets
Describe implementation of spreadsheet operations in business scope

Competency: Perform word processing functions

Competency Builders:

Define word processing terminology
Explain functions of word processing software
Explain word processing applications
Use appropriate reference materials
Keyboard efficiently by touch
Use mouse
Initialize diskette
Prepare backup file
Maintain backup file
Update spelling dictionary and spell check
Perform document functions (e.g., locate, rename, delete, save, retrieve, copy)
Perform formatting functions (e.g., set margins and tabs, center, underline, bold, cut and paste)
Use edit features
Use sort features
Add page numbers to document
Add headers and footers
Print files, pages, screens and blocks of text
Verify accuracy of output
Create a document
Save a document to disk
Retrieve a document from disk
Edit an existing document
Describe word-wrap
Print a document
Create glossary file
Store boilerplate material
Compose documents at keyboard
Tabulate multiple columns
Prepare new documents from existing ones
Merge selected copy with new information
Prepare various types of table options
Index text
Format text
Integrate database, spreadsheet and graphic files
Convert documents from one system to another
Demonstrate use of computer thesaurus
Use multimedia techniques/resources

Competency: Use spreadsheet packages

Competency Builders:

Use spell check
Execute an electronic spreadsheet
Enter data, formulas, and functions
Differentiate between labels and numbers
Compare absolute and relative addressing
Speculate using "what if..." questions
Sequence keystrokes in the creation of a macro
Create database within spreadsheet and perform data query functions
Move around in spreadsheet and correct errors
Format spreadsheet
Create graphs
Print graphs
Save previously saved files
Load previously saved files
Replicate cells using copy commands
Use electronic spreadsheet to complete business application
Use spreadsheet to plan financial strategies
Prepare spreadsheet
Use multimedia techniques/resources

Competency: Explain database packages

Competency Builders:

Define database
Explain terms used in database systems
Describe common functions of database systems

Competency: Use database packages

Competency Builders:

Use database package to create, input, edit, and display fields and records
Analyze structure of database files
Perform calculations with a database file
Alter structure of database file
Sort records based on multiple fields
Identify advanced database technology
Use appropriate reference materials
Create relational database
Enter elements into database
Proofread database
Edit database
Design report formats
Apply database management system (DBMS) commands
Print reports using data from multiple databases
Use database files with other application software
Verify accuracy of output (e.g., edit reports)
Use multimedia techniques/resources

Competency: Explain function of shared environments

Competency Builders:

List purposes of a network environment
Define electronic mail
Identify advantages and disadvantages of electronic mail
Describe impact of local and wide area networks on mail delivery

Competency: Use a shared environment

Competency Builders:

Compose electronic messages
Send electronic messages using appropriate format
List categories of electronic mail service
Transmit document using electronic mail system
Monitor electronic mail

Competency: Manage software packages

Competency Builders:

Install software packages
Upgrade software packages
Document installation of software packages
Convert data files

Competency: Perform computer business graphics

Competency Builders:

Define purpose and types of graphics
Use appropriate reference materials
Create graphics
Proofread graphics
Edit graphics
Save graphics
Retrieve graphics
Print graphics to various output devices
Verify accuracy of output
Use graphic functions to create files, input data, process data, and produce output
Use graphics files with other application software

Competency: Use graphic user interface (GUI) techniques

Competency Builders:

Explain multi tasking environment
Setup data exchange between two different applications
Setup an object link between two different applications
Explain the use of dynamic link libraries

Unit: General Accounting Functions

Competency: **Apply arithmetical accounting skills**

Competency Builders:

Compute cash discounts for various terms
Compute trade discounts
Compute extension, sales tax, and totals of sales slips
Compute markups and markdowns
Calculate rates of trade and cash discounts
Calculate unit prices given quantity prices
Calculate costs of portions of units
Solve problems involving fractions, decimals, and percentages
Solve commission problems
Solve finance-charge problems
Solve annual percentage rate problems

Competency: **Apply accounting principles**

Competency Builders:

Define accounting terminology
Define journals and ledgers
Identify basic accounting principles
Identify basic accounting applications
Identify computer accounting applications
Identify financial control procedures
Explain increases and decreases in accounts
Explain periodic reporting procedures
Prepare income statement
Prepare balance sheet columns
Prepare cash flow statement
Interpret balance sheets
Interpret income statements
Interpret cash-flow analysis statements

Competency: Perform manual accounting functions

Competency Builders:

Explain use of record keeping in relation to business and economic applications
Use appropriate reference materials
Analyze transactions
Use "T" accounts to label increases, decreases, and balances
Record transactions
Process receivables
Monitor expense accounts
Process payables
Prepare budgets
Process purchases
Prepare comparative (actual vs. budget) income statement

Competency: Perform automated accounting functions

Competency Builders:

Use appropriate reference materials
Operate equipment
Key data on numeric keyboard
Import or download data from computer records
Scan data from various media
Use integrated software package for simulation of accounting cycle
Set up chart of accounts for general ledger
Set up accounts payable and accounts receivable ledgers
Add accounts to general and subsidiary ledgers
Input account balances
Enter journal transactions
Process journal transaction
Prepare trial balance
Verify data and correct errors
Generate reports
Proofread accounting records and statements
Edit accounting records and statements
Save accounting records and statements
Retrieve accounting records and statements
Print accounting records and statements

Competency: Perform spreadsheet functions

Competency Builders:

Explain computer spreadsheet analysis
Use appropriate reference materials
Operate equipment
Create or format spreadsheet
Enter formulas
Move cells and ranges
Enter data on spreadsheet
Import or download data to spreadsheet
Apply data sort, data query, data fill, and data distribution
Export spreadsheet files to word processing, graphics and database files
Import spreadsheet files to word processing, graphics and database files
Proofread spreadsheet data
Edit spreadsheet data
Verify accuracy of output
Save spreadsheet
Retrieve spreadsheet
Print spreadsheet
Use spreadsheet functions to create files, input data, process data, and produce output
Use spreadsheet files with other application software

Competency: Perform payroll functions

Competency Builders:

Use appropriate reference materials
Collect payroll data
Process payroll
Comply with company policies and procedures
Comply with government and legal requirements
Maintain records and forms
Monitor personnel costs

Competency: Perform banking functions

Competency Builders:

Use appropriate reference materials
Prepare checks, deposit slips, and withdrawal slips
Maintain checkbook
Balance checkbook
Maintain petty cash
Balance petty cash
Explain automated banking transactions
Prepare banking records
Maintain banking records

Competency: Process cost accounting information

Competency Builders:

Define cost accounting, direct materials, direct labor and overhead
Define cost allocation methods
Identify source documents
Compute direct materials by job or process
Compute direct labor by job or process
Compute overhead rates to apply to jobs or processes
Compute cost of goods produced
Compute cost of goods sold
Journalize cost of goods produced and sold entries
Post cost of goods produced and sold entries
Compute cost of inventories
Prepare cost production reports
Prepare related records of job or process costs

Competency: Process end-of-fiscal-period information

Competency Builders:

Prepare worksheet
Prepare trial balance
Foot ledger accounts and compute balances
Prove equality of debits and credits
Locate errors
Record adjustments
Make appropriate extensions
Journalize basic adjusting, closing, and reversing entries
Post basic adjusting, closing, and reversing entries
Prepare basic income statement
Prepare basic balance sheet
Prepare basic cash flow statement

Unit: Operating Systems

Competency: Describe operating systems

Competency Builders:

Describe microcomputer operating systems
Describe minicomputer operating systems
Describe mainframe operating systems
Describe network operating systems
Describe how commands handle tasks in operating systems
Describe various input/output systems
Describe the purpose of operating system utilities
Differentiate between a compiler and an interpreter
Describe the processing that occurs when an interpreter is used
Describe the processing that occurs when a compiler is used

Competency: Explain central processing unit (CPU) control

Competency Builders:

Explain CPU processes
Explain CPU concurrency
Explain CPU scheduling
Explain CPU multitasking
Explain CPU multiprocessing

Competency: Describe memory management

Competency Builders:

Describe functions of primary memory
Describe functions of virtual memory (e.g., paging, segmentation)
Describe functions of extended memory
Describe functions of expanded memory
Describe functions of cache memory

Competency: Explain auxiliary storage management

Competency Builders:

Explain storage management software
Identify auxiliary storage media
Describe operational characteristics of storage media
Describe storage capacities of storage media
Describe retrieval methods of storage media
Differentiate between files and directories
Differentiate among management devices (e.g., disk, tape, CD-ROM)
Explain redundant array of inexpensive disks (RAID)
Explain mirroring concepts

Competency: Store media

Competency Builders:

Identify need for data library
Use appropriate reference materials
Retrieve stored media
File stored media
Initialize media
Catalog media
Maintain supplies
Maintain media library
Maintain backup records
Maintain company and/or government standards for media security
Maintain archives of company records required by policy or law

Competency: Explain security issues

Competency Builders:

Define backup and recovery
Explain disaster planing
Define authentication (e.g., passwords, access level)
Describe encryption techniques
Describe viruses and worms
Describe vaccines
Explain operating system penetration

Competency: Maintain security requirements

Competency Builders:

Implement security procedures
Apply business ethics
Follow security rules, regulations, and codes
Document security procedures
Perform security checks

Competency: Define open system concepts

Competency Builders:

Differentiate between proprietary and open system architecture
Explain X/OPEN
Explain purpose of Open Software Foundation
Explain purpose of UNIX International
Explain purpose of Corporation for Open Systems International
Identify the OSI Model

Competency: Operate system

Competency Builders:

Review automated scheduling software
Define job, batch, and job step
Describe data requirements
Use appropriate reference materials
Perform power-up and log-on procedures
Demonstrate basic programming skills
Use console device to interact with and respond to system messages
Secure supplies and resources
Follow processing procedures for each application/job
Run application/job
Describe scheduling priority
Describe transmittal form and transmittal log
Develop an audit trail
Handle materials and equipment in a responsible manner

Competency: Maintain system

Competency Builders:

Use appropriate reference materials
Monitor system status and performance
Run diagnostics
Respond to system messages
Report computer system malfunction(s)
Report software malfunction(s)
Fix recoverable problems
Maintain security
Maintain computer log
Perform backup procedure(s)
Perform preventative maintenance procedures
Change hardware
Install software packages
Restore system
Follow log-off and power-down procedure(s)

Competency: Administer system

Competency Builders:

Manage complete system
Manage network
Manage operating system
Manage applications

Unit: Network Operations

Competency: Explain communication standards

Competency Builders:

Identify the seven layers of the International Organization Standard's Open System Interconnection (OSI) Model
Describe each OSI layer, including their interconnectivity
Identify software standards for subnet, presentation layers, and file servers

Competency: Describe network structures

Competency Builders:

Differentiate topologies (e.g., hierarchical, ring, star)
Differentiate architecture(s)
Explain layering
Describe protocols (e.g., TCP/IP, IPX/SPX, etc..)
Describe frame types (e.g., SNA<802.3, 802.5)
Define local area network
Define different types of LANs
Differentiate between network operating systems and data distribution systems
Identify advantages and disadvantages of various LAN operating systems
List duties of LAN supervisor

Competency: Explain network transmission and media

Competency Builders:

Explain signals
Explain patterns
Explain error detection and correction
Explain speed of transmission
Explain use of media
Explain use of equipment
Explain role of network manager

Competency: **Explain network connectivity and interoperability**

Competency Builders:

Identify equipment connecting devices
Differentiate between sync and async devices
Identify software connecting devices
Identify media connecting devices
Identify type of interoperability (e.g., peer-to-peer, peer-to-host)
Identify problems of mixed vendor network implementation
Describe internetworking solutions
Describe cabling schemes and alternatives
Identify network topologies
List pros and cons of network interface cards
List pros and cons of network servers
Explain why internetting is useful or necessary
Describe levels at which internetting can occur
Identify protocols used for remote interconnecting and when each should be used
List common pitfalls when networking computers
Identify method used to evaluate emulators
Describe gateways (e.g., mainframe, protocol)

Competency: **Describe network operating systems**

Competency Builders:

Identify responsibilities of a network operating system
Explain installation procedure for network operating systems
Explain commands needed to use network operating systems
List characteristics of a network interface card (NIC)
Define criteria used to describe network servers
Define criteria used to evaluate network operating systems

Competency: **Describe potential networking problems with applications software**

Competency Builders:

Describe potential hard disk compatibility problems
Differentiate between site multi user and single user licenses
Describe necessary precautions included in programs used on networks

Competency: Explain network management

Competency Builders:

List steps in mapping a network
Explain why files must be organized according to owners, users, and privileges
Describe common standards for setting up and naming files
List criteria used to determine if a file should be network accessible
Identify methods to increase performance
Define hierarchical directory
Explain methods used to determine how many servers should be used
State reasons for channel and cable bottlenecks

Competency: Explain network security

Competency Builders:

Explain need for data protection
Identify common backup devices
Explain criteria for selecting a tape system
Differentiate between hard and soft errors
Contrast streaming and file-by-file backup systems
Explain process for archiving files
Explain necessity for network security
Identify levels of network sedulity and reasons for their existence

Competency: Explain installation procedures

Competency Builders:

Explain why an installation log is necessary
Identify methods of distributing cable, including modeling examples
Identify problems associated with cable installation
Describe types of cable, cable connectors, and grounding techniques
Explain cable testing and tolerance levels
Identify sources of interference and include methods to overcome each

Competency: Use network knowledge

Competency Builders:

Use electronic/voice/multi-media mail
Share files
Use dial-in access
Make backups
Share resources
Explain software control
Apply security and authentication

Competency: Apply network operations

Competency Builders:

Assess user needs to determine which LAN operating systems to use
Demonstrate applications used on LANs
Describe how the network protocols work together
Operate the system in a multi-user environment
Demonstrate knowledge of various networks and compatibility
Differentiate among various topologies
Identify which network operating system to use
Build synchronous transmission circuit using a modem
Build synchronous transmission circuit using a modem
Connect PCs to form a network
Connect two PCs networks
Perform file to file copy in a PC network
Implement print queue in a PC network
Configure file server in a PC network
Connect PC to mini or mainframe
Link mixed vendors (e.g., PC to Mac)
Interconnect via backbone network
Build small ethernet or token ring network

Competency: Administer network

Competency Builders:

Use appropriate reference materials
Apply current LAN concepts and technology
Attach computers and peripherals to LAN
Change computer hardware
Set up system configuration
Install LAN manager software
Install software packages
Respond to system messages
Troubleshoot system
Run software applications
Back up and restore systems
Perform system analysis
Use security procedures
Perform preventative maintenance
Select access control and security
Outline resource management
Install cabling
Install network
Analyze network operations
Check physical and virtual connections
Modify network
Apply standards
Acquire licensing
Plan disaster recovery
Address protocols (e. g., ethernet, token ring, Arcnet)
Monitor network activity/performance

Competency: Perform network maintenance and diagnostics

Competency Builders:

Execute network diagnostics program for software
Execute network diagnostics program for hardware
Apply standard and protocols
Document action(s) taken

Unit: Basic Mainframe Concepts

Competency: Describe mainframe operations

Competency Builders:

Identify types of mainframe memory
Identify data storage techniques used by mainframe operation
Explain how data is stored in mainframe computer memory
Explain how a mainframe computer system executes program instruction
Explain mainframe storage capacity

Competency: Describe interface techniques

Competency Builders:

Identify elements of mainframe user interface
Identify mainframe hardware components and their advantages and disadvantages
Trace evolution of user interface software for mainframe
Illustrate various forms of mainframe menus
Describe mainframe graphical user interface (GUI)

Competency: Explain information processing cycle

Competency Builders:

Define mainframe operating systems
Define data processing terminology
Describe the difference between data files and program files
Differentiate between internal and external commands
Differentiate among interactive, transaction-oriented, and batch processing
Describe processing capabilities of computer operations
Specify roles of systems, procedures, and personnel in mainframe information processing
Explain functions of input, output, revision, distribution, storage, and reproduction

Competency: Explain purpose of mainframe database systems

Competency Builders:

Define mainframe database
Explain terms used in mainframe database systems
Describe common function of mainframe database systems

Competency: Use mainframe database system

Competency Builders:

Enter data into database and sort
Enter data into database and retrieve
Enter data into database and select
Prepare formatted business forms using mainframe database

Unit: Computer Hardware Design

Competency: Explain standards

Competency Builders:

Identify OSI, IEEE, ISO, and CCITT standards
Identify standard setting bodies and their proclamations
Explain conformance and APIs

Competency: Describe computational site environment

Competency Builders:

Identify environmental requirements
Identify power requirements and power supplies
Identify ergonomic issues
Identify structural capacities
Identify local codes

Competency: Differentiate among architecture and processor types

Competency Builders:

Describe architecture and processors of microcomputers
Describe architecture and processors of minicomputers
Describe architecture and processors of mainframes
Explain instruction sets

Competency: Analyze computer systems architecture

Competency Builders:

Describe the principles and operation of addresses and interrupts
Describe the principles and operation of volatile and non-volatile memory
Describe the principles and operation of advanced memory techniques
Define individual system blocks
Draw systems configuration in block detail
Interpret computer acronyms
Describe priorities and interrupts at systems level
Identify direct memory access data handling system(s)
Define functions of advanced memory techniques (e.g., virtual, pipeline, cache)
Describe how commands handle tasks in operating systems
Describe various input/output systems
Describe the purpose of operating system utilities
Differentiate between a compiler and an interpreter
Describe the processing that occurs when an interpreter is used
Describe the processing that occurs when a compiler is used

Competency: Describe operation of chips and boards

Competency Builders:

Describe chip configuration and structure
Describe operation of memory boards, including chip sizes
Describe operation of mother boards
Describe operation of compressor boards (e.g., math, graphics, FAX, modems, voice)
Describe operation of controller cards
Describe operation of network interface cards
Describe operation of PCMCIA

Competency: Describe operation of connectivity devices

Competency Builders:

Describe operation of baluns
Describe operation of multiplexers, MODEMS, CODECS, DSU
Describe operation of switches, gateways, bridges, routers, brouters, and repeaters
Describe operation of test equipment (e.g., protocol analyzers)

Competency: **Explain operation of microprocessor systems**

Competency Builders:

Describe essential components of microprocessor and their functions
Describe principles and operation of BUS concepts (e.g., VESA, EISA)
Describe principles and operation of types of memory circuits
Identify operating systems (e.g., DOS, OS/2, UNIX) and their attributes
Describe microprocessor instructions sets
Describe principles and operation of microprocessor machine code
Demonstrate use of microprocessor machine code
Decode microprocessor machine code
Identify types of input and output devices and peripherals
Describe principles and operation of storage devices
Interface input and output ports to peripherals
Identify central processing unit building blocks and their uses
Identify levels of computer languages

Competency: **Troubleshoot a microcomputer system**

Competency Builders:

Draw system configuration in block detail
Identify priorities and interrupts at system level
Operate computer system architecture
Repair computer system architecture
Demonstrate use of volatile and non-volatile memory
Repair or replace volatile and non-volatile memory

Competency: **Install computer system (i.e., monitor, keyboard, disk drive, and printer)**

Competency Builders:

Configure system
Verify system
Print copy of root directory to printer
Document system installation

Competency: Explain operation of peripheral equipment

Competency Builders:

Identify types of card and paper-tape equipment and interface controllers
Define printer types and interface controllers
Explain the operation of typical magnetic tape equipment and interface controllers
Describe disk equipment and interface controllers
Define environmental requirements for peripherals and media

Competency: Repair peripheral equipment

Competency Builders:

Troubleshoot and repair disk equipment and interface controllers
Troubleshoot and repair display terminals and interface controllers, including touch screens
Troubleshoot and repair printers and interface controllers, including laser printers
Troubleshoot and repair mouse
Troubleshoot and repair bar code scanner
Troubleshoot and repair CD-ROM

Competency: Explain communication interfacing

Competency Builders:

Identify EIA, IEEE and CCITT standards
Differentiate sync and async devices
Define networking levels or layers
Define protocols
Define packet switching
Define multi-user systems

Unit: Supervision

Competency: **Manage human resources**

Competency Builders:

Apply appropriate management and leadership styles
Use foresight to anticipate and manage change
Display managerial and supervisory skills
Apply human relations skills
Develop management objectives
Create and/or implement organizational charts
Clarify company policies and procedures
Maintain office procedures manual(s)
Establish office procedures
Prepare and/or monitor budgets
Prepare managerial reports
Analyze production reports
Maintain appropriate work environment
Conduct tours
Monitor progress
Prepare and communicate productivity reports
Provide and/or coordinate training for new policies
Troubleshoot office problems
Communicate performance expectations
Counsel employees about career objectives
Maintain performance records
Adhere to company policies regarding discrimination and harassment
Address employees regarding disciplinary action(s)
Recommend employees for promotion
Explain procedure for handling grievances
Evaluate employee performance
Document personnel issues

Competency: Manage projects

Competency Builders:

Conduct needs analysis
Set priorities
Research information
Develop goals and objectives
Develop strategic plan
Develop project budget
Apply forecasting techniques
Apply prioritizing techniques
Schedule work assignments
Collect data
Analyze data
Act on data
Monitor project progress
Meet project timelines
Monitor budget
Apply quality measures and counter measures

Competency: Manage work flow

Competency Builders:

Plan office layout for workflow
Create organizational charts
Communicate operating policies and procedures
Maintain office procedures manual(s)
Identify production standards
Interface with other departments
Prioritize work
Assign work
Delegate work
Provide instruction
Monitor progress
Complete productivity and/or managerial reports
Complete assigned tasks in a timely manner
Coordinate with team members

Competency: Conduct staff/team meetings

Competency Builders:

Plan meeting
Set agenda
Set and schedule meeting
Schedule meeting room
Invite appropriate personnel
Identify need for outside speakers
Assign someone to take minutes
Make introductions
Invite questions and comments, and group participation
Focus on agenda items, but maintain issues list as they arise
Decide appropriate action, time frame, and accountability to tasks
Monitor time
Close meeting on time
Publish minutes in timely manner to appropriate persons

Competency: Conduct training

Competency Builders:

Secure training resources, materials, and equipment
Assess training needs
Train employees
Evaluate progress
Provide appropriate feedback
Document training participation

Telecommunications Specialist

NOTE: Each TCP should respond to labor market demands in your area. Therefore, the following pages should be examined before being selected for use in TCP Part I (See "The TCP Process" Tab). For example, some units may not apply to your situation, nor might all the competencies within each unit be appropriate. Also, note that several units appear within each of the twelve occupations in this binder. Those "common" units should only appear once in the draft competency list for TCP Part I if you are compiling several occupations in a cluster format (See "TCP Matrix" Tab).

Units to Consider:	Page
Employability Skills	TS-3
Professionalism	TS-8
Teamwork	TS-12
Professional and Ethical Standards	TS-14
Economic and Business Principles	TS-16
Customer Relations	TS-20
Problem Analysis	TS-21
Project Management	TS-22
Technical Documentation	TS-23
Basic Personal Computer Concepts	TS-24
Packaged PC Applications	TS-26
General Accounting Functions	TS-31
Operating Systems	TS-36
Network Operations	TS-40
Basic Mainframe Concepts	TS-45
Computer Hardware Design	TS-47
Supervision	TS-51

DON'T FORGET TO INSERT YOUR ACADEMIC COMPETENCIES HERE

Communications Literacy, Mathematics Literacy, Science Literacy, and Technology Literacy have been removed so that you may insert your own academic lists here.

COMMUNICATIONS LITERACY

(e.g., Reading, Writing, Speaking, and Listening)

MATHEMATICS LITERACY

(e.g., Algebra, Geometry, Trigonometry, Calculus)

SCIENCE LITERACY

(e.g., Physical Science, Environmental Science, Agriscience, Biology, Chemistry, Physics, Anatomy & Physiology)

TECHNOLOGY LITERACY

(i.e., the impact of technology on humans and their home, work, and play environments)

Unit: Employability Skills

Competency: Develop a career plan

Competency Builders:

Identify current interests and aptitudes
Identify common barriers to employment
Describe strategies to overcome employment barriers
Locate resources for finding employment
Research job trends
Identify career options
Identify advantages and disadvantages of career options (in addition to other than monetary)
Identify job requirements
Investigate education/training opportunities
Evaluate personal strengths and weaknesses

Competency: Prepare for employment

Competency Builders:

Identify traditional and non-traditional employment sources
Identify present and future employment opportunities (by geographic location)
Research job opportunities, including non-traditional careers
Compare salary ranges and benefit packages
Compile occupational profile
Identify rights and responsibilities of equal employment opportunity laws
Design resume and cover letter
Target resume
Secure references
Investigate generic and specific employment tests (e.g., civil service exam; drug screening)
Use follow-up techniques to enhance employment potential
Demonstrate legible written communication skills using correct grammar, spelling, punctuation, and concise wording
Describe methods for handling illegal questions on job application forms and during interviews
Write letter of application
Research prospective employer and services performed
Explain critical importance of personal appearance, hygiene, and demeanor
Interpret job description
Demonstrate appropriate interview question and answer techniques
Demonstrate methods for handling difficult interview questions
Evaluate job offers
Write letter of acceptance
Write letter of declination
Demonstrate good listening skills
Ask for the job tactfully
Participate in extracurricular activities (e.g., student government, community projects,)

Competency: Evaluate the importance of self-esteem as an employability skill

Competency Builders:

Identify factors that affect self-esteem
Compare effects of low self-esteem and high self-esteem
Identify strategies to promote positive self-esteem

Competency: Demonstrate job retention skills

Competency Builders:

Identify employer expectations regarding job performance, work habits, attitudes, personal appearance, and hygiene
Exhibit appropriate work habits and attitude
Demonstrate ability to set priorities
Identify behaviors to establish successful working relationships
Identify alternatives for dealing with harassment, bias, and discrimination based on race, color, national origin, sex, religion, handicap, or age
Identify opportunities for advancement
List reasons for termination
List consequences of being absent frequently from job
List consequences of frequently arriving late for work
Demonstrate interpersonal relations skills (i.e., verbal and written)
Demonstrate negotiation skills
Demonstrate teamwork
Follow chain-of-command
Exhibit appropriate job dedication

Competency: Demonstrate knowledge of work ethic

Competency Builders:

Define work ethic
Identify factors that influence work ethic
Differentiate law and ethics
Describe how personal values are reflected in work ethic
Describe how interactions in the workplace affect personal work ethic
Describe how life changes affect personal work ethic

Competency: Exhibit appropriate work ethic

Competency Builders:

Use time-management techniques
Avoid personal activity during work hours
Attend work as scheduled
Adhere to company and/or governmental policies, procedures, rules, and regulations
Exercise confidentiality
Demonstrate appropriate human relations skills
Adhere to rules of conduct
Accept constructive criticism
Offer constructive criticism
Take pride in work
Resolve conflict
Manage stress
Avoid sexual connotations and harassment
Adjust to changes in the workplace
Demonstrate punctuality
Assume responsibility for personal decisions and actions
Take responsibility for assignments
Follow chain-of-command

Competency: Apply decision-making techniques

Competency Builders:

Identify decision to be made
Identify ownership of decision to be made
Identify possible alternatives and their consequences
Make decisions based on facts, legality, ethics, goals, and/or culture
Apply time factor(s)
Present decision to be implemented
Evaluate decision made
Take responsibility for decision

Competency: Apply problem-solving techniques

Competency Builders:

Identify problem
Select appropriate problem solving tools/techniques
Identify root problem cause(s)
Track root problem cause(s)
Identify possible solutions and their consequences (e.g., long term, short term, crisis)
Use resources to explore possible solutions to problem
Contrast advantages and disadvantages of each solution
Identify appropriate action
Evaluate results
Identify post-preventive action

Competency: Exhibit characteristics for job advancement

Competency Builders:

Display positive attitude
Demonstrate knowledge of position
Perform quality work
Adapt to changing situations and technology
Demonstrate capability/responsibility for different positions
Identify characteristics of effective leaders
Identify opportunities for leadership in work place/community
Demonstrate initiative to affect change in workplace
Participate in continuing education/training program
Responds appropriately to criticism from employer, supervisor, or other employees
Exhibit awareness of corporate culture
Prepare for job setbacks
Exhibit continual growth based on performance evaluation
Set realistic goals

Unit: Professionalism

Competency: Project professional image

Competency Builders:

Define professionalism
Exhibit professional appearance
Exhibit professional manners
Project professional attitude
Identify individuals' vital role in organization
Exhibit proper etiquette in professionally-related situations

Competency: Achieve individual and professional goals

Competency Builders:

Set flexible, realistic, and measurable goals
Identify potential barriers to achieving goals
Identify strategies for addressing barriers to goal achievement
Breakdown long-term goals into short-term goals
Prioritize goals
Commit to goals
Adjust goals
Obtain support for goals
Reward goal achievement

Competency: Manage personal finances

Competency Builders:

Explain need for personal management records
Balance checkbook
Identify tax obligations
Analyze how credit affects financial security
Compare types and methods of investments
Compare types and methods of borrowing
Compare types and methods of insurance
Compare types of retirement options/plans
Identify discriminatory vs. non-discriminatory expenditures

Competency: Support community well-being

Competency Builders:

Identify environmental, educational, and social issues
Participate in social and/or community activities

Competency: Achieve organizational goals

Competency Builders:

Evaluate personal goals in relation to organizational goals
Monitor progress by evaluating feedback
List responsibilities in relation to organization goals
Accomplish assigned tasks
Exercise responsibility in relation to organizational goals
Set appropriate personal performance standards
Communicate goals with supervisor and peers
Demonstrate knowledge of products and services
Promote organizational image and mission

Competency: Demonstrate positive relations in the workplace

Competency Builders:

Identify personality types of self and other
Identify various management styles
Support employer expectations
Support employer decisions
Accept constructive criticism
Give constructive feedback
Adapt to changes in workplace
List factors to consider before resigning
Write letter of resignation

Competency: **Manage stressful situations**

Competency Builders:

Accept stress as part of daily life
Identify personal and professional factors contributing to stress
Describe physical and emotional responses to stress
Evaluate positive and negative effects of stress on productivity
Identify strategies for reducing stress
Implement strategies to manage stress
Create strategies for developing and maintaining support systems

Competency: **Analyze effects of family on work and work on family**

Competency Builders:

Identify how family values, goals, and priorities are reflected in work place
Identify responsibilities and rewards associated with paid and non-paid work
Identify responsibilities and rewards associated with families
Explain how family responsibilities can conflict with work
Explain how work can conflict with family responsibilities
Explain how work-related stress can affect families
Explain how family-related stress can affect work
Identify family support systems and resources
Identify work-related support systems and resources
Communicate with family regarding work

Competency: **Apply lifelong learning skills**

Competency Builders:

Define lifelong learning
Identify factors that cause need for lifelong learning
Analyze effects of change
Identify reasons why goals change
Describe importance of flexibility and adaptability
Evaluate need for continuing education/training

Competency: Manage professional development

Competency Builders:

Identify career opportunities
Modify career plan
Participate in continuing education/training opportunities
Document continuing education/training
Read profession-related manuals, technical journals, and periodicals
Attend meetings, workshops, seminars, conferences, and demonstrations
Participate in professional organizations
Build personal/professional mentor relationship
Build personal/professional support system
Build professional network
Strengthen communication skills
Strengthen leadership skills
Strengthen management skills

Unit: Teamwork

Competency: Demonstrate knowledge of teamwork

Competency Builders:

Define empowerment
Differentiate work groups and teams
Identify conditions essential to teamwork (e.g., brainstorming)
Explain influence of culture (e.g., corporate, community) on teamwork
Identify appropriate situations for using teams
Define team structures (e.g., cross functional, quality improvement, task force, quality circles)
Identify team building concepts
Describe characteristics and dynamics of teams
Identify characteristics of effective team leaders and members
Identify responsibilities of a valuable team member
Identify methods of involving each member of a team
Explain how individuals from various backgrounds contribute to work-related situations (e.g., technical training, cultural heritage)
Explain the purpose of facilitators
Define consensus
Define reward/recognition system

Competency: Demonstrate teamwork

Competency Builders:

Identify purpose of team and intended goal (include time frames)
Structure team around purpose
Define responsibilities of team members
Contribute to efficiency and success of team
Work toward individual and team milestones
Analyze results of team project
Facilitate a team meeting
Assist team member(s) with problem
Monitor time frame
Stress continuous improvement
Accept failure as part of learning

Competency: **Use teamwork to solve problems**

Competency Builders:

Identify appropriate situations for using teams
Use problem-solving process in a team setting
Identify quality management processes/techniques
Identify quality assurance processes/techniques
Prepare presentation

Competency: **Conduct team meetings**

Competency Builders:

Plan agenda
Schedule meeting and location
Invite appropriate personnel
Solicit outside speakers as needed
Assign someone to take minutes
Facilitate introductions
Invite questions and comments and group participation
Focus team on agenda items
Assign appropriate action, time frame and accountability to tasks
Monitor time
Close meeting on time
Publish minutes in timely manner
Set ground rules
Avoid placing individual agendas above the group's agenda

Unit: Professional and Ethical Standards

Competency: Explain professional responsibilities

Competency Builders:

Explain the need for professional and ethical standards
Explain responsibility of the individual to apply ethical standards
Identify responsibility to client(s) or employer(s)
Explain employer's consequences of unprofessional and/or unethical employee behavior
Identify responsibility to self (e.g., professional appearance and limitations) and to profession
Explain importance of conflict resolution in the workplace

Competency: Describe self-managed employees

Competency Builders:

Explain the need for organizing tasks
Explain management-by-objectives
Explain importance of planning, both long-term and short-term
Explain importance of evaluating progress
Explain importance of reporting progress
Explain time management
Explain the benefit of creative brainstorming and innovative thinking

Competency: Describe intellectual property

Competency Builders:

Explain legal ownership of proprietary assets produced by the computing professional
Explain public policy
Explain rights of the originator
Explain rights of the public
Explain patent
Explain copyright
Explain licenses
Explain confidentiality

Competency: **Apply professional and ethical standards**

Competency Builders:

Identify computing industry's standards
Describe computing industry's code of ethics
Explain various ethics established by computing societies
Apply various ethics established by computing societies

Unit: Economic and Business Principles

Competency: Describe basic economic concepts

Competency Builders:

Identify importance of economic resources
Explain concept of economic resources
Explain importance of economic resources
Explain concept of economic goods and services
Differentiate between economic goods and services
Differentiate between needs and wants
Explain concept of supply and demand
Explain concept of price
Explain how supply, demand, and price are related
Explain concept of private enterprise and business ownership
Explain concept of profit
Explain concept of risk
Explain concept of competition
Explain relationship among risk, competition, and profit

Competency: Conduct training

Competency Builders:

Secure training resources, materials, and equipment
Assess training needs
Train employees
Evaluate progress
Provide appropriate feedback

Competency: Evaluate economic systems

Competency Builders:

Compare types of economic systems
Research free enterprise system
Interpret relationship between government and business
Interpret relationship between labor and management

Competency: Illustrate basic economic principles

Competency Builders:

Illustrate global economic and world market applications
Illustrate economic cycles (e.g., unemployment, recession, inflation, budget deficits)
Illustrate economic activity's affect on business (e.g., financial, competitor indicators, industry)

Competency: Analyze cost and profit influences

Competency Builders:

Identify importance of maximizing quality
Identify importance of maximizing productivity
Contrast specialized training and cross training
Contrast labor and management
Contrast government and business

Competency: Illustrate economic indicators and trends

Competency Builders:

Define gross national product and gross domestic product
Interpret impact of interest rates
Interpret impact of government spending
Interpret impact of seasonal business cycles
Interpret impact of inflation, growth, recession, and unemployment
Interpret impact of national and world events
Interpret impact of the growth of international trade

Competency: Explain basic international trade concepts

Competency Builders:

Explain nature and importance of international trade
Contrast advantages and disadvantages of marketing in international trade
Explain balance of trade concepts
Describe impact of foreign investment

Competency: Explain basic business concepts

Competency Builders:

Identify functions of business
Explain role of management
Explain role of labor
Explain concept of service as a product
Explain role of administration
Explain role of operations
Identify role of company objectives
Identify importance of ethical business practices
Identify types of ownership
Identify components of a business plan

Competency: Summarize business principles

Competency Builders:

Explain business organizations and functions
Describe business reporting and information flow
Map interface of departmental functions
Identify communication channels (e.g., formal, informal)
Explain total quality management (TQM) principles

Competency: Illustrate legal concepts

Competency Builders:

Define legal terminology
Explain business law concepts
Interpret contracts and/or legal documents
Explain relationship of laws and regulations to company contracts, policies, and procedures
Explain laws relating to working conditions, wages and hours, civil rights, social security, disability, and unemployment insurance

Competency: Explain role of marketing

Competency Builders:

Explain aspects of sound business image
Identify purposes of marketing
Identify functions of marketing
Describe effects of marketing
Explain product/service variety
Identify target markets
Define sales potential
Explain pricing strategies
Differentiate advertising campaigns
Explain advantages and disadvantages of advertising agencies
Describe sales incentive programs
Maintain marketing feedback and make appropriate changes
Identify types of marketing strategies and the advantage and disadvantage of each (e.g. phone, mail, person)
Design monitor plan

Competency: Serve customers/clients

Competency Builders:

Identify importance of customer
Identify customer services to provide
Relate to customers in timely fashion
Identify customer needs and wants
Gather complete and accurate information
Apply customer service concepts and terminology
Identify methods for addressing dissatisfied customers

Unit: Customer Relations

Competency: Demonstrate positive relations with customers

Competency Builders:

Identify importance of customers to business
Differentiate between customer needs and wants
Provide prompt and courteous service
Resolve customer inquiries and complaints and/or refer customer to appropriate person
Identify methods of addressing dissatisfied customers

Competency: Perform scheduling functions to meet customers needs

Competency Builders:

Create calendar/schedule
Maintain appointment calendars
Process requests for appointments
Verify appointments
Notify customer of changes in schedule
Manage scheduling conflicts

Unit: Problem Analysis

Competency: Appraise situations

Competency Builders:

Identify concerns
Classify concerns
Set priorities
Identify resolution process
Plan resolution

Competency: Analyze potential problems

Competency Builders:

Identify potential problems
Identify likely causes
Identify preventive actions
Identify contingent actions

Competency: Analyze actual problems

Competency Builders:

Identify deviation
Identify problem and possible causes
Test for probable causes
Verify cause

Competency: Analyze decisions

Competency Builders:

Identify objective(s)
Classify objective(s)
Identify alternatives
Evaluate alternatives
Assess risks
Make final choice

Unit: Project Management

Competency: Explain project management

Competency Builders:

Identify project purpose/goal
Identify project objectives
Identify work breakdown structure (WBS)
Identify resource requirements

Competency: Plan projects

Competency Builders:

Apply responsibility assignment matrix (RAM)
Apply Gantt or bar charts
Apply network diagrams
Apply critical path method (CPM)
Apply project education and review techniques
Apply software programs

Competency: Implement projects

Competency Builders:

Monitor project
Control project
Modify project

Competency: Evaluate projects

Competency Builders:

Analyze performance
Close-out project evaluation
Draw project management conclusions

Unit: Technical Documentation

Competency: **Demonstrate proficiency in technical documentation**

Competency Builders:

Identify parameters
Ask questions
Interpret specifications or drawings
Record process (e.g., flowchart, step-by-step)
Record data
Maintain test logs
Compile cumulative reference/record

Competency: **Demonstrate proficiency in technical report writing**

Competency Builders:

Use data books and cross reference/technical manuals
Identify type of report needed
Compile relevant data
Design applicable charts and graphs
Analyze data
Draw conclusions
Outline reports
Write reports
Present reports

Unit: Basic Personal Computer Concepts

Competency: Explain use of personal computers in business

Competency Builders:

Describe the impact of computer use on individuals and businesses
Identify basic applications of computers in business
Identify automated business systems and electronic media
Identify different types and sizes of computers
Define input, processor, output, and storage units
Identify how PCs integrate with other information technologies (e.g., scanners, mainframes)
Describe impact of computer use on individuals and business
Identify basic applications of computers in business

Competency: Describe personal computer operations

Competency Builders:

Explain how data is stored in main computer memory
Explain how a computer system executes program instruction
Explain electronic storage capacity
Explain electronic units of measure and how they represent data
Identify data storage techniques
Identify types of memory
Explain different types of input and output

Competency: Explain information processing

Competency Builders:

Define operating systems
Describe the difference between data files and program files
Demonstrate knowledge of system commands
Define software types and functions
Describe basic disk operation and care
List business applications of software package
List advantages and disadvantages of integrated and dedicated software

Competency: **Demonstrate computer literacy**

Competency Builders:

Identify computer components
Identify parallel versus serial ports
Explain differences between conventional, expanded, and extended memory
Identify use of storage media
List commands that affect disk operation
Use disk operating system to format disks
Originate directories and subdirectories
Explain common configuration variables
Explain device driver concepts
Demonstrate commands that open, close, copy, delete, and rename files on disk
Keyboard document(s) using computer

Unit: Packaged PC Applications

Competency: Explain software applications

Competency Builders:

Describe need for application software
Describe different types of software applications
Explain advantages and disadvantages of various software applications
List software sources
Explain copyright laws for software

Competency: Explain spreadsheet packages

Competency Builders:

Define spreadsheet
Demonstrate knowledge of basic spreadsheet terminology
Define components of spreadsheets
Describe implementation of spreadsheet operations in business scope

Competency: **Perform word processing functions**

Competency Builders:

Define word processing terminology
Explain functions of word processing software
Explain word processing applications
Use appropriate reference materials
Keyboard efficiently by touch
Use mouse
Initialize diskette
Prepare backup file
Maintain backup file
Update spelling dictionary and spell check
Perform document functions (e.g., locate, rename, delete, save, retrieve, copy)
Perform formatting functions (e.g., set margins and tabs, center, underline, bold, cut and paste)
Use edit features
Use sort features
Add page numbers to document
Add headers and footers
Print files, pages, screens and blocks of text
Verify accuracy of output
Create a document
Save a document to disk
Retrieve a document from disk
Edit an existing document
Describe word-wrap
Print a document
Create glossary file
Store boilerplate material
Compose documents at keyboard
Tabulate multiple columns
Prepare new documents from existing ones
Merge selected copy with new information
Prepare various types of table options
Index text
Format text
Integrate database, spreadsheet and graphic files
Convert documents from one system to another
Demonstrate use of computer thesaurus
Use multimedia techniques/resources

Competency: **Use spreadsheet packages**

Competency Builders:

Use spell check
Execute an electronic spreadsheet
Enter data, formulas, and functions
Differentiate between labels and numbers
Compare absolute and relative addressing
Speculate using "what if..." questions
Sequence keystrokes in the creation of a macro
Create database within spreadsheet and perform data query functions
Move around in spreadsheet and correct errors
Format spreadsheet
Create graphs
Print graphs
Save previously saved files
Load previously saved files
Replicate cells using copy commands
Use electronic spreadsheet to complete business application
Use spreadsheet to plan financial strategies
Prepare spreadsheet
Use multimedia techniques/resources

Competency: **Explain database packages**

Competency Builders:

Define database
Explain terms used in database systems
Describe common functions of database systems

Competency: Use database packages

Competency Builders:

Use database package to create, input, edit, and display fields and records
Analyze structure of database files
Perform calculations with a database file
Alter structure of database file
Sort records based on multiple fields
Identify advanced database technology
Use appropriate reference materials
Create relational database
Enter elements into database
Proofread database
Edit database
Design report formats
Apply database management system (DBMS) commands
Print reports using data from multiple databases
Use database files with other application software
Verify accuracy of output (e.g., edit reports)
Use multimedia techniques/resources

Competency: Explain function of shared environments

Competency Builders:

List purposes of a network environment
Define electronic mail
Identify advantages and disadvantages of electronic mail
Describe impact of local and wide area networks on mail delivery

Competency: Use a shared environment

Competency Builders:

Compose electronic messages
Send electronic messages using appropriate format
List categories of electronic mail service
Transmit document using electronic mail system
Monitor electronic mail

Competency: Manage software packages

Competency Builders:

Install software packages
Upgrade software packages
Document installation of software packages
Convert data files

Competency: Perform computer business graphics

Competency Builders:

Define purpose and types of graphics
Use appropriate reference materials
Create graphics
Proofread graphics
Edit graphics
Save graphics
Retrieve graphics
Print graphics to various output devices
Verify accuracy of output
Use graphic functions to create files, input data, process data, and produce output
Use graphics files with other application software

Competency: Use graphic user interface (GUI) techniques

Competency Builders:

Explain multi tasking environment
Setup data exchange between two different applications
Setup an object link between two different applications
Explain the use of dynamic link libraries

Unit: General Accounting Functions

Competency: Apply arithmetical accounting skills

Competency Builders:

Compute cash discounts for various terms
Compute trade discounts
Compute extension, sales tax, and totals of sales slips
Compute markups and markdowns
Calculate rates of trade and cash discounts
Calculate unit prices given quantity prices
Calculate costs of portions of units
Solve problems involving fractions, decimals, and percentages
Solve commission problems
Solve finance-charge problems
Solve annual percentage rate problems

Competency: Apply accounting principles

Competency Builders:

Define accounting terminology
Define journals and ledgers
Identify basic accounting principles
Identify basic accounting applications
Identify computer accounting applications
Identify financial control procedures
Explain increases and decreases in accounts
Explain periodic reporting procedures
Prepare income statement
Prepare balance sheet columns
Prepare cash flow statement
Interpret balance sheets
Interpret income statements
Interpret cash-flow analysis statements

Competency: Perform manual accounting functions

Competency Builders:

Explain use of record keeping in relation to business and economic applications
Use appropriate reference materials
Analyze transactions
Use "T" accounts to label increases, decreases, and balances
Record transactions
Process receivables
Monitor expense accounts
Process payables
Prepare budgets
Process purchases
Prepare comparative (actual vs. budget) income statement

Competency: Perform automated accounting functions

Competency Builders:

Use appropriate reference materials
Operate equipment
Key data on numeric keyboard
Import or download data from computer records
Scan data from various media
Use integrated software package for simulation of accounting cycle
Set up chart of accounts for general ledger
Set up accounts payable and accounts receivable ledgers
Add accounts to general and subsidiary ledgers
Input account balances
Enter journal transactions
Process journal transaction
Prepare trial balance
Verify data and correct errors
Generate reports
Proofread accounting records and statements
Edit accounting records and statements
Save accounting records and statements
Retrieve accounting records and statements
Print accounting records and statements

Competency: **Perform spreadsheet functions**

Competency Builders:

Explain computer spreadsheet analysis
Use appropriate reference materials
Operate equipment
Create or format spreadsheet
Enter formulas
Move cells and ranges
Enter data on spreadsheet
Import or download data to spreadsheet
Apply data sort, data query, data fill, and data distribution
Export spreadsheet files to word processing, graphics and database files
Import spreadsheet files to word processing, graphics and database files
Proofread spreadsheet data
Edit spreadsheet data
Verify accuracy of output
Save spreadsheet
Retrieve spreadsheet
Print spreadsheet
Use spreadsheet functions to create files, input data, process data, and produce output
Use spreadsheet files with other application software

Competency: Perform payroll functions

Competency Builders:

Use appropriate reference materials
Collect payroll data
Process payroll
Comply with company policies and procedures
Comply with government and legal requirements
Maintain records and forms
Monitor personnel costs

Competency: Perform banking functions

Competency Builders:

Use appropriate reference materials
Prepare checks, deposit slips, and withdrawal slips
Maintain checkbook
Balance checkbook
Maintain petty cash
Balance petty cash
Explain automated banking transactions
Prepare banking records
Maintain banking records

Competency: Process cost accounting information

Competency Builders:

Define cost accounting, direct materials, direct labor and overhead
Define cost allocation methods
Identify source documents
Compute direct materials by job or process
Compute direct labor by job or process
Compute overhead rates to apply to jobs or processes
Compute cost of goods produced
Compute cost of goods sold
Journalize cost of goods produced and sold entries
Post cost of goods produced and sold entries
Compute cost of inventories
Prepare cost production reports
Prepare related records of job or process costs

Competency: Process end-of-fiscal-period information

Competency Builders:

Prepare worksheet
Prepare trial balance
Foot ledger accounts and compute balances
Prove equality of debits and credits
Locate errors
Record adjustments
Make appropriate extensions
Journalize basic adjusting, closing, and reversing entries
Post basic adjusting, closing, and reversing entries
Prepare basic income statement
Prepare basic balance sheet
Prepare basic cash flow statement

Unit: Operating Systems

Competency: Describe operating systems

Competency Builders:

Describe microcomputer operating systems
Describe minicomputer operating systems
Describe mainframe operating systems
Describe network operating systems
Describe how commands handle tasks in operating systems
Describe various input/output systems
Describe the purpose of operating system utilities
Differentiate between a compiler and an interpreter
Describe the processing that occurs when an interpreter is used
Describe the processing that occurs when a compiler is used

Competency: Explain central processing unit (CPU) control

Competency Builders:

Explain CPU processes
Explain CPU concurrency
Explain CPU scheduling
Explain CPU multitasking
Explain CPU multiprocessing

Competency: Describe memory management

Competency Builders:

Describe functions of primary memory
Describe functions of virtual memory (e.g., paging, segmentation)
Describe functions of extended memory
Describe functions of expanded memory
Describe functions of cache memory

Competency: Explain auxiliary storage management

Competency Builders:

Explain storage management software
Identify auxiliary storage media
Describe operational characteristics of storage media
Describe storage capacities of storage media
Describe retrieval methods of storage media
Differentiate between files and directories
Differentiate among management devices (e.g., disk, tape, CD-ROM)
Explain redundant array of inexpensive disks (RAID)
Explain mirroring concepts

Competency: Store media

Competency Builders:

Identify need for data library
Use appropriate reference materials
Retrieve stored media
File stored media
Initialize media
Catalog media
Maintain supplies
Maintain media library
Maintain backup records
Maintain company and/or government standards for media security
Maintain archives of company records required by policy or law

Competency: Explain security issues

Competency Builders:

Define backup and recovery
Explain disaster planing
Define authentication (e.g., passwords, access level)
Describe encryption techniques
Describe viruses and worms
Describe vaccines
Explain operating system penetration

Competency: Maintain security requirements

Competency Builders:

Implement security procedures
Apply business ethics
Follow security rules, regulations, and codes
Document security procedures
Perform security checks

Competency: Define open system concepts

Competency Builders:

Differentiate between proprietary and open system architecture
Explain X/OPEN
Explain purpose of Open Software Foundation
Explain purpose of UNIX International
Explain purpose of Corporation for Open Systems International
Identify the OSI Model

Competency: Operate system

Competency Builders:

Review automated scheduling software
Define job, batch, and job step
Describe data requirements
Use appropriate reference materials
Perform power-up and log-on procedures
Demonstrate basic programming skills
Use console device to interact with and respond to system messages
Secure supplies and resources
Follow processing procedures for each application/job
Run application/job
Describe scheduling priority
Describe transmittal form and transmittal log
Develop an audit trail
Handle materials and equipment in a responsible manner

Competency: Maintain system

Competency Builders:

Use appropriate reference materials
Monitor system status and performance
Run diagnostics
Respond to system messages
Report computer system malfunction(s)
Report software malfunction(s)
Fix recoverable problems
Maintain security
Maintain computer log
Perform backup procedure(s)
Perform preventative maintenance procedures
Change hardware
Install software packages
Restore system
Follow log-off and power-down procedure(s)

Competency: Administer system

Competency Builders:

Manage complete system
Manage network
Manage operating system
Manage applications

Unit: Network Operations

Competency: Explain communication standards

Competency Builders:

Identify the seven layers of the International Organization Standard's Open System Interconnection (OSI) Model
Describe each OSI layer, including their interconnectivity
Identify software standards for subnet, presentation layers, and file servers

Competency: Describe network structures

Competency Builders:

Differentiate topologies (e.g., hierarchical, ring, star)
Differentiate architecture(s)
Explain layering
Describe protocols (e.g., TCP/IP, IPX/SPX, etc..)
Describe frame types (e.g., SNA<802.3, 802.5)
Define local area network
Define different types of LANs
Differentiate between network operating systems and data distribution systems
Identify advantages and disadvantages of various LAN operating systems
List duties of LAN supervisor

Competency: Explain network transmission and media

Competency Builders:

Explain signals
Explain patterns
Explain error detection and correction
Explain speed of transmission
Explain use of media
Explain use of equipment
Explain role of network manager

Competency: Explain network connectivity and interoperability

Competency Builders:

Identify equipment connecting devices
Differentiate between sync and async devices
Identify software connecting devices
Identify media connecting devices
Identify type of interoperability (e.g., peer-to-peer, peer-to-host)
Identify problems of mixed vendor network implementation
Describe internetworking solutions
Describe cabling schemes and alternatives
Identify network topologies
List pros and cons of network interface cards
List pros and cons of network servers
Explain why internetting is useful or necessary
Describe levels at which internetting can occur
Identify protocols used for remote interconnecting and when each should be used
List common pitfalls when networking computers
Identify method used to evaluate emulators
Describe gateways (e.g., mainframe, protocol)

Competency: Describe network operating systems

Competency Builders:

Identify responsibilities of a network operating system
Explain installation procedure for network operating systems
Explain commands needed to use network operating systems
List characteristics of a network interface card (NIC)
Define criteria used to describe network servers
Define criteria used to evaluate network operating systems

Competency: Describe potential networking problems with applications software

Competency Builders:

Describe potential hard disk compatibility problems
Differentiate between site multi user and single user licenses
Describe necessary precautions included in programs used on networks

Competency: Explain network management

Competency Builders:

List steps in mapping a network
Explain why files must be organized according to owners, users, and privileges
Describe common standards for setting up and naming files
List criteria used to determine if a file should be network accessible
Identify methods to increase performance
Define hierarchical directory
Explain methods used to determine how many servers should be used
State reasons for channel and cable bottlenecks

Competency: Explain network security

Competency Builders:

Explain need for data protection
Identify common backup devices
Explain criteria for selecting a tape system
Differentiate between hard and soft errors
Contrast streaming and file-by-file backup systems
Explain process for archiving files
Explain necessity for network security
Identify levels of network sedulity and reasons for their existence

Competency: Explain installation procedures

Competency Builders:

Explain why an installation log is necessary
Identify methods of distributing cable, including modeling examples
Identify problems associated with cable installation
Describe types of cable, cable connectors, and grounding techniques
Explain cable testing and tolerance levels
Identify sources of interference and include methods to overcome each

Competency: Use network knowledge

Competency Builders:

Use electronic/voice/multi-media mail
Share files
Use dial-in access
Make backups
Share resources
Explain software control
Apply security and authentication

Competency: Apply network operations

Competency Builders:

Assess user needs to determine which LAN operating systems to use
Demonstrate applications used on LANs
Describe how the network protocols work together
Operate the system in a multi-user environment
Demonstrate knowledge of various networks and compatibility
Differentiate among various topologies
Identify which network operating system to use
Build synchronous transmission circuit using a modem
Build synchronous transmission circuit using a modem
Connect PCs to form a network
Connect two PCs networks
Perform file to file copy in a PC network
Implement print queue in a PC network
Configure file server in a PC network
Connect PC to mini or mainframe
Link mixed vendors (e.g., PC to Mac)
Interconnect via backbone network
Build small ethernet or token ring network

Competency: Administer network

Competency Builders:

Use appropriate reference materials
Apply current LAN concepts and technology
Attach computers and peripherals to LAN
Change computer hardware
Set up system configuration
Install LAN manager software
Install software packages
Respond to system messages
Troubleshoot system
Run software applications
Back up and restore systems
Perform system analysis
Use security procedures
Perform preventative maintenance
Select access control and security
Outline resource management
Install cabling
Install network
Analyze network operations
Check physical and virtual connections
Modify network
Apply standards
Acquire licensing
Plan disaster recovery
Address protocols (e. g., ethernet, token ring, Arcnet)
Monitor network activity/performance

Competency: Perform network maintenance and diagnostics

Competency Builders:

Execute network diagnostics program for software
Execute network diagnostics program for hardware
Apply standard and protocols
Document action(s) taken

Unit: Basic Mainframe Concepts

Competency: Describe mainframe operations

Competency Builders:

Identify types of mainframe memory
Identify data storage techniques used by mainframe operation
Explain how data is stored in mainframe computer memory
Explain how a mainframe computer system executes program instruction
Explain mainframe storage capacity

Competency: Describe interface techniques

Competency Builders:

Identify elements of mainframe user interface
Identify mainframe hardware components and their advantages and disadvantages
Trace evolution of user interface software for mainframe
Illustrate various forms of mainframe menus
Describe mainframe graphical user interface (GUI)

Competency: Explain information processing cycle

Competency Builders:

Define mainframe operating systems
Define data processing terminology
Describe the difference between data files and program files
Differentiate between internal and external commands
Differentiate among interactive, transaction-oriented, and batch processing
Describe processing capabilities of computer operations
Specify roles of systems, procedures, and personnel in mainframe information processing
Explain functions of input, output, revision, distribution, storage, and reproduction

Competency: Explain purpose of mainframe database systems

Competency Builders:

Define mainframe database
Explain terms used in mainframe database systems
Describe common function of mainframe database systems

Competency: Use mainframe database system

Competency Builders:

Enter data into database and sort
Enter data into database and retrieve
Enter data into database and select
Prepare formatted business forms using mainframe database

Unit: Computer Hardware Design

Competency: **Explain standards**

Competency Builders:

Identify OSI, IEEE, ISO, and CCITT standards
Identify standard setting bodies and their proclamations
Explain conformance and APIs

Competency: **Describe computational site environment**

Competency Builders:

Identify environmental requirements
Identify power requirements and power supplies
Identify ergonomic issues
Identify structural capacities
Identify local codes

Competency: **Differentiate among architecture and processor types**

Competency Builders:

Describe architecture and processors of microcomputers
Describe architecture and processors of minicomputers
Describe architecture and processors of mainframes
Explain instruction sets

Competency: Analyze computer systems architecture

Competency Builders:

Describe the principles and operation of addresses and interrupts
Describe the principles and operation of volatile and non-volatile memory
Describe the principles and operation of advanced memory techniques
Define individual system blocks
Draw systems configuration in block detail
Interpret computer acronyms
Describe priorities and interrupts at systems level
Identify direct memory access data handling system(s)
Define functions of advanced memory techniques (e.g., virtual, pipeline, cache)
Describe how commands handle tasks in operating systems
Describe various input/output systems
Describe the purpose of operating system utilities
Differentiate between a compiler and an interpreter
Describe the processing that occurs when an interpreter is used
Describe the processing that occurs when a compiler is used

Competency: Describe operation of chips and boards

Competency Builders:

Describe chip configuration and structure
Describe operation of memory boards, including chip sizes
Describe operation of mother boards
Describe operation of compressor boards (e.g., math, graphics, FAX, modems, voice)
Describe operation of controller cards
Describe operation of network interface cards
Describe operation of PCMCIA

Competency: Describe operation of connectivity devices

Competency Builders:

Describe operation of baluns
Describe operation of multiplexers, MODEMS, CODECS, DSU
Describe operation of switches, gateways, bridges, routers, brouters, and repeaters
Describe operation of test equipment (e.g., protocol analyzers)

Competency: Explain operation of microprocessor systems

Competency Builders:

Describe essential components of microprocessor and their functions
Describe principles and operation of BUS concepts (e.g., VESA, EISA)
Describe principles and operation of types of memory circuits
Identify operating systems (e.g., DOS, OS/2, UNIX) and their attributes
Describe microprocessor instructions sets
Describe principles and operation of microprocessor machine code
Demonstrate use of microprocessor machine code
Decode microprocessor machine code
Identify types of input and output devices and peripherals
Describe principles and operation of storage devices
Interface input and output ports to peripherals
Identify central processing unit building blocks and their uses
Identify levels of computer languages

Competency: Troubleshoot a microcomputer system

Competency Builders:

Draw system configuration in block detail
Identify priorities and interrupts at system level
Operate computer system architecture
Repair computer system architecture
Demonstrate use of volatile and non-volatile memory
Repair or replace volatile and non-volatile memory

Competency: Install computer system (i.e., monitor, keyboard, disk drive, and printer)

Competency Builders:

Configure system
Verify system
Print copy of root directory to printer
Document system installation

Competency: Explain operation of peripheral equipment

Competency Builders:

Identify types of card and paper-tape equipment and interface controllers
Define printer types and interface controllers
Explain the operation of typical magnetic tape equipment and interface controllers
Describe disk equipment and interface controllers
Define environmental requirements for peripherals and media

Competency: Repair peripheral equipment

Competency Builders:

Troubleshoot and repair disk equipment and interface controllers
Troubleshoot and repair display terminals and interface controllers, including touch screens
Troubleshoot and repair printers and interface controllers, including laser printers
Troubleshoot and repair mouse
Troubleshoot and repair bar code scanner
Troubleshoot and repair CD-ROM

Competency: Explain communication interfacing

Competency Builders:

Identify EIA, IEEE and CCITT standards
Differentiate sync and async devices
Define networking levels or layers
Define protocols
Define packet switching
Define multi-user systems

Unit: Supervision

Competency: **Manage human resources**

Competency Builders:

Apply appropriate management and leadership styles
Use foresight to anticipate and manage change
Display managerial and supervisory skills
Apply human relations skills
Develop management objectives
Create and/or implement organizational charts
Clarify company policies and procedures
Maintain office procedures manual(s)
Establish office procedures
Prepare and/or monitor budgets
Prepare managerial reports
Analyze production reports
Maintain appropriate work environment
Conduct tours
Monitor progress
Prepare and communicate productivity reports
Provide and/or coordinate training for new policies
Troubleshoot office problems
Communicate performance expectations
Counsel employees about career objectives
Maintain performance records
Adhere to company policies regarding discrimination and harassment
Address employees regarding disciplinary action(s)
Recommend employees for promotion
Explain procedure for handling grievances
Evaluate employee performance
Document personnel issues

Competency: Manage projects

Competency Builders:

Conduct needs analysis
Set priorities
Research information
Develop goals and objectives
Develop strategic plan
Develop project budget
Apply forecasting techniques
Apply prioritizing techniques
Schedule work assignments
Collect data
Analyze data
Act on data
Monitor project progress
Meet project timelines
Monitor budget
Apply quality measures and counter measures

Competency: Manage work flow

Competency Builders:

Plan office layout for workflow
Create organizational charts
Communicate operating policies and procedures
Maintain office procedures manual(s)
Identify production standards
Interface with other departments
Prioritize work
Assign work
Delegate work
Provide instruction
Monitor progress
Complete productivity and/or managerial reports
Complete assigned tasks in a timely manner
Coordinate with team members

Competency: Conduct staff/team meetings

Competency Builders:

Plan meeting
Set agenda
Set and schedule meeting
Schedule meeting room
Invite appropriate personnel
Identify need for outside speakers
Assign someone to take minutes
Make introductions
Invite questions and comments, and group participation
Focus on agenda items, but maintain issues list as they arise
Decide appropriate action, time frame, and accountability to tasks
Monitor time
Close meeting on time
Publish minutes in timely manner to appropriate persons

Competency: Conduct training

Competency Builders:

Secure training resources, materials, and equipment
Assess training needs
Train employees
Evaluate progress
Provide appropriate feedback
Document training participation

Competency Index

This index allows you to scan the competencies under each unit title. Please note the academic units (i.e., Communications, Mathematics, Science, and Technology Literacy) are not listed due to their being specific to the State of Ohio.

Unit: Employability Skills

Competencies:
Develop a career plan
Prepare for employment
Evaluate the importance of self-esteem as an employability skill
Demonstrate job retention skills
Demonstrate knowledge of work ethic
Exhibit appropriate work ethic
Apply decision-making techniques
Apply problem-solving techniques
Exhibit characteristics for job advancement

Unit: Professionalism

Competencies:
Project professional image
Achieve individual and professional goals
Manage personal finances
Support community well-being
Achieve organizational goals
Demonstrate positive relations in the workplace
Manage stressful situations
Analyze effects of family on work and work on family
Apply lifelong learning skills
Manage professional development

Unit: Teamwork

Competencies:
Demonstrate knowledge of teamwork
Demonstrate teamwork
Use teamwork to solve problems
Conduct team meetings

Unit: Professional and Ethical Standards

Competencies
Explain professional responsibilities
Describe self-managed employees
Describe intellectual property
Apply professional and ethical standards

Unit: Economic and Business Principles

Competencies:
Describe basic economic concepts
Conduct training
Evaluate economic systems
Illustrate basic economic principles
Analyze cost and profit influences
Illustrate economic indicators and trends
Explain basic international trade concepts
Explain basic business concepts
Summarize business principles
Illustrate legal concepts
Explain role of marketing
Serve customers/clients

Unit: Customer Relations

Competencies:
Demonstrate positive relations with customers
Perform scheduling functions to meet customers needs

Unit: Problem Analysis

Competencies:
Appraise situations
Analyze potential problems
Analyze actual problems
Analyze decisions

Unit: Project Management

Competencies:
Explain project management
Plan projects
Implement projects
Evaluate projects

Unit: Technical Documentation

Competencies:
Demonstrate proficiency in technical documentation
Demonstrate proficiency in technical report writing

Unit: Basic Personal Computer Concepts

Competencies:
Explain use of personal computers in business
Describe personal computer operations
Explain information processing

Unit: Packaged PC Applications

Competencies:
Demonstrate computer literacy
Explain software applications
Explain spreadsheet packages
Perform word processing functions
Use spreadsheet packages
Explain database packages
Use database packages
Explain function of shared environments
Use a shared environment
Manage software packages
Perform computer business graphics
Use graphic user interface (GUI) techniques

Unit: General Office Functions

Competencies:
Maintain a safe working environment
Maintain work flow
Demonstrate positive relations with customers/clients
Perform telephone operations
Use facsimile machine
Assist visitors
Perform scheduling functions
Use job-related reference materials
Coordinate meeting arrangements
Generate minutes
Coordinate travel plans
Perform mail functions
Maintain office supplies
Perform copying functions
Maintain filing system
Maintain hardware and software

Unit: Office Technology

Competencies:

Use telecommunications
Perform basic word processing functions
Perform transcription functions
Use computerized filing system
Perform database functions
Perform desktop publishing functions
Perform computer business graphics

Unit: General Accounting Functions

Competencies:

Apply arithmetical accounting skills
Apply accounting principles
Perform manual accounting functions
Perform automated accounting functions
Perform spreadsheet functions
Perform payroll functions
Perform banking functions
Process cost accounting information
Process end-of-fiscal-period information

Unit: Specialized Accounting Functions

Competencies:
Process purchase orders
Process purchase invoices
Process purchase returns and allowances
Process accounts payable
Process purchase payables and payments
Process notes and interest payable
Process invoices and receivables
Process sales returns and allowances
Process uncollectible accounts
Process collections
Process notes and interest receivables
Perform checking account functions
Maintain petty cash fund
Process employee payroll records
Process payroll
Process employer payroll taxes
Process accruals and deferrals
Use financial statements to make business decisions
Update value of plant and equipment assets

Unit: Business Law

Competencies:
Explain legal rights and responsibilities
Demonstrate knowledge of labor law
Demonstrate knowledge of environmental law
Demonstrate knowledge of contract law
Demonstrate knowledge of corporation law
Demonstrate knowledge of consumer law
Demonstrate knowledge of real estate law
Demonstrate knowledge of estates, trusts and wills

Unit: Legal Office Procedures

Competencies:
Demonstrate proficiency in legal terminology
Demonstrate proficiency in legal communication
Maintain filing system
Demonstrate proficiency in litigation

Unit: Computer Operations

Competencies:
Operate computer systems
Maintain computer systems
Maintain security requirements
Explain operation of peripheral devices
Operate peripheral devices
Store media
Maintain microcomputers
Explain operating systems

Unit: Software Methodology

Competencies:
Solve fundamental software methodology problems
Describe tools used to design software systems
Develop software requirements
Design software

Unit: Operating Systems

Competencies:
Describe operating systems
Explain central processing unit (CPU) control
Describe memory management
Explain auxiliary storage management
Store media
Explain security issues
Maintain security requirements
Define open system concepts
Operate system
Maintain system
Administer system

Unit: Application Programming and Design

Competencies:
Explain computer applications
Develop computer applications
Explain programming theory
Apply programming theory
Explain programming languages
Use programming language
Use operating system
Test programs
Apply programming skills
Develop documentation
Demonstrate knowledge of the systems design process
Evaluate system
Implement system

Unit: Network Operations

Competencies:
Explain communication standards
Describe network structures
Explain network transmission and media
Explain network connectivity and interoperability
Describe network operating systems
Describe potential networking problems with applications software
Explain network management
Explain network security
Explain installation procedures
Use network knowledge
Apply network operations
Administer network
Perform network maintenance and diagnostics

Unit: Basic Mainframe Concepts

Competencies:
Describe mainframe operations
Describe interface techniques
Explain information processing cycle
Explain purpose of mainframe database systems
Use mainframe database system

Unit: Computer Hardware Design

Competencies:

Explain Standards
Describe computational site environment
Differentiate among architecture and processor types
Analyze computer systems architecture
Describe operation of chips and boards
Describe operation of connectivity devices
Explain operation of microprocessor systems
Troubleshoot a microcomputer system
Install computer system (i.e., monitor, keyboard, disk drive, and printer)
Explain operation of peripheral equipment
Repair peripheral equipment
Explain communication interfacing

Unit: Microcomputer Electronics

Competencies:

Demonstrate proficiency in microprocessors
Demonstrate proficiency in electronic blueprint reading
Demonstrate proficiency in direct current (DC) circuits
Demonstrate proficiency in alternating current (AC) circuits
Demonstrate proficiency in discrete solid-state devices
Demonstrate proficiency in digital circuits
Apply troubleshooting techniques to a microcomputer system

Unit: Database Modeling & Design

Competencies:

Explain database concepts
Create a database model
Perform database functions

Unit: Small Business Management

Competencies:
Explain entrepreneurship
Evaluate entrepreneurship as a personal goal
Develop a business plan
Identify role of small business in the economy
Analyze how legislation affects small business
Evaluate factors affecting small business management
Identify marketing mix
Promote products and/or services
Manage customer relations
Minimize internal theft
Explain financing methodologies
Identify costs of financial services
Prepare financial records and reports
Explain management's role in operating a business
Practice safety precautions
Comply with government regulations
Perform management activities

Unit: Supervision

Competencies:
Manage human resources
Manage projects
Manage work flow
Conduct staff/team meetings
Conduct training

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